

# Stars and brown dwarfs in the $\sigma$ Orionis cluster: the Mayrit catalogue

José A. Caballero<sup>1,\*</sup>

Max-Planck-Institut für Astronomie, Königstuhl 17, D-69117 Heidelberg, Germany, e-mail: caballero@astrax.fis.ucm.es

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## ABSTRACT

**Context.** The young  $\sigma$  Orionis cluster is an indispensable basis for understanding the formation and evolution of stars, brown dwarfs and planetary-mass objects. Our knowledge of its stellar population is, however, incomplete.

**Aims.** I present the Mayrit catalogue, that comprises most of the stars and high-mass brown dwarfs of the cluster.

**Methods.** The basis of this work is an optical-near infrared correlation between the 2MASS and DENIS catalogues in a circular area of radius 30 arcmin centred on the OB-type binary  $\sigma$  Ori AB. The analysis is supported on a bibliographic search of confirmed cluster members with features of youth and on additional X-ray, mid-infrared and astrometric data.

**Results.** I list 241  $\sigma$  Orionis stars and brown dwarfs with known features of youth, 97 candidate cluster members (40 are new) and 115 back- and foreground sources in the survey area. The 338 cluster members and member candidates constitute the Mayrit catalogue.

**Conclusions.** This catalogue is a suitable input for studying the spatial distribution, multiplicity, properties and frequency of discs and the complete mass function of  $\sigma$  Orionis.

**Key words.** open clusters and associations: individual:  $\sigma$  Orionis – astronomical data bases: miscellaneous – stars: low mass, brown dwarfs

## 1. Introduction

The  $\sigma$  Orionis cluster in the Ori OB 1b Association is getting as important for the study of the formation, evolution and characterisation of stars and substellar objects as other famous clusters and star-forming regions, like the Hyades, the Pleiades, the Orion Nebula Cluster or the Taurus-Auriga Complex. The  $\sigma$  Orionis cluster is young ( $3 \pm 2$  Ma), nearby ( $\sim 385$  pc) and relatively free of extinction (Lee 1968; Brown et al. 1994; Oliveira et al. 2002; Zapatero Osorio et al. 2002a; Sherry et al. 2004; Béjar et al. 2004b; Caballero 2007d). Firstly identified by Garrison (1967) and Lyngå (1981),  $\sigma$  Orionis was rediscovered by Wolk (1996) and Walter et al. (1997). They reported a clustering of young low-mass stars, many of them positionally coincident with X-ray sources, surrounding the Trapezium-like, multiple stellar system  $\sigma$  Ori in the vicinity of the Horsehead Nebula (see Caballero 2007b for a description of the multiple system  $\sigma$  Ori and its surroundings). Previously, the area had been investigated during wide searches in the Orion complex with prism-objective and Schmidt plates, detecting a wealth of emission stars (e.g. Haro & Moreno 1953; Wiramihardja et al. 1989), but the cluster had not been treated as an independent entity within the complex. Complete compilations of the de-

terminations in the literature of the age, heliocentric distance, frequency of discs and mass function of the  $\sigma$  Orionis cluster are in Caballero (2007a). A chapter of the Handbook of Star Forming Regions, edited by B. Reipurth, will be exclusively devoted to  $\sigma$  Orionis (F. M. Walter et al., in press).

After the seminal work by Béjar et al. (1999), who found for the first time a rich population of young brown dwarfs in  $\sigma$  Orionis, the cluster has turned into an excellent laboratory for the study of, e.g.:

- the search for free-floating planetary-mass objects (with masses below the deuterium-burning limit) and the study of the substellar mass function down to a few Jupiter masses (Zapatero Osorio et al. 2000; Béjar et al. 2001; González-García et al. 2006; Caballero et al. 2007);
- the frequency and the properties of  $\sim 3$  Ma-old discs at different mass intervals (Jayawardhana et al. 2003; Oliveira et al. 2004, 2006; Hernández et al. 2007; Caballero et al. 2007; Zapatero Osorio et al. 2007a);
- the masses of OB-type stars in resolved binary systems (Heintz 1997; Mason et al. 1998; Caballero 2007d);
- the X-ray emission of young stars and brown dwarfs (Mokler & Stelzer 2002; Sanz-Forcada et al. 2004; Franciosi et al. 2006; Caballero 2007b);
- the characteristics of jets and Herbig-Haro objects (Reipurth et al. 1998; López-Martín et al. 2001; Andrews et al. 2004); and

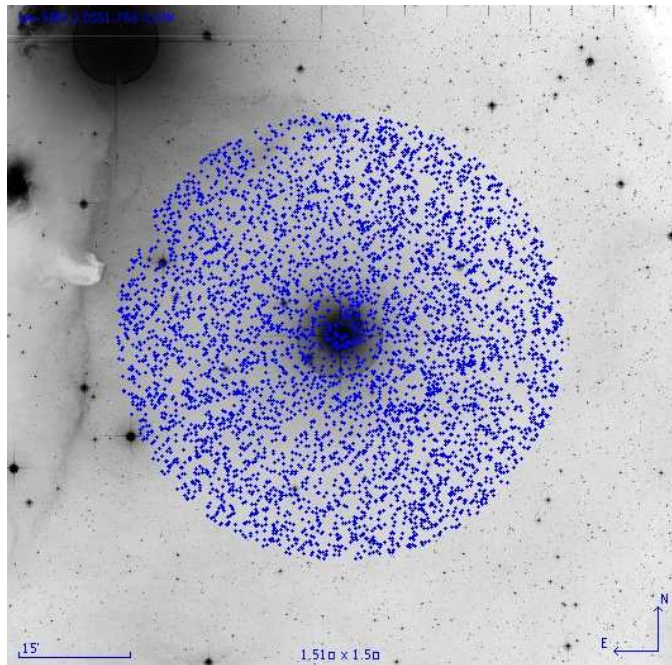
\* Formerly: Alexander von Humboldt Fellow at the Max-Planck-Institut für Astronomie. Currently: Investigador Juan de la Cierva at the Universidad Complutense de Madrid.

- the photometric variability of low-mass stars and brown dwarfs (Bailer-Jones & Mundt 2001; Caballero et al. 2004; Scholz & Eisloffel 2004).

Many interesting star-like objects have been discovered in the cluster, from the helium-rich, B2.0Vp-type magnetic star  $\sigma$  Ori E (Greenstein & Wallerstein 1958), through the Class I object candidate IRAS 05358–0238 (Oliveira & van Loon 2004), to the hypothetical proplyd  $\sigma$  Ori IRS1 (van Loon & Oliveira 2003; Caballero 2005, 2007b). The most interesting objects in the cluster are, however, below the hydrogen-burning mass limit. Some of these substellar objects are the  $\sim$ T6-type object S Ori 70 (which may be the least massive body directly detected out of the Solar System,  $\sim 3 M_{\text{Jup}}$  – Zapatero Osorio et al. 2002c, 2007b; Burgasser et al. 2004), the T Tauri substellar analog S Ori J053825.4–024241 (which is the most variable brown dwarf yet found; Caballero et al. 2006a), the two strong  $H\alpha$  emitters at the planetary boundary S Ori 55 and S Ori 71 (with masses of only 10–20  $M_{\text{Jup}}$  and equivalent widths of the  $H\alpha$  line of up to  $-700 \text{ \AA}$ ; Zapatero Osorio et al. 2002b; Barrado y Navascués et al. 2002a) and the brown dwarf-exoplanet system candidate SE 70 + S Ori 68 (which could be the widest planetary system known so far; Caballero et al. 2006b). The number of known substellar objects in  $\sigma$  Orionis is comparable to those of other rich, more massive, younger star-forming regions like Chamaeleon, Ophiuchus or the Orion Nebula Cluster. However,  $\sigma$  Orionis is by far the region with the largest amount of brown dwarfs with membership confirmation ( $> 30$ ; Caballero et al. 2007) and planetary-mass object candidates (29; Zapatero Osorio et al. 2000; González-García et al. 2006; Caballero 2007b; Caballero et al. 2007). Many of the latter bodies have measured L spectral types and/or flux excess longwards of  $5 \mu\text{m}$  (Zapatero Osorio et al. (2007a).

Important efforts have been recently carried out to characterise the  $\sigma$  Orionis cluster in general and to investigate the connection between its stellar and substellar populations in particular (e.g. Béjar et al. 2004a; Sherry et al. 2004; Kenyon et al. 2005; Burningham et al. 2005; Caballero 2005, 2007a, 2007b, 2007c). The works by Kenyon et al. (2005), who investigated membership, binarity and accretion among very low-mass stars and brown dwarfs surrounding  $\sigma$  Ori, and, especially, Sherry et al. (2004) stand out. The latter authors presented an ambitious study, estimating the number of cluster members in the mass range  $0.2 M_{\odot} \lesssim M \lesssim 1.0 M_{\odot}$  and the radius, age and total mass of the cluster. All these works are, however, incomplete or biased in some way: no comprehensive, homogenous, multi-band study, fully covering the whole stellar mass interval (from  $\sim 20 M_{\odot}$  down to the substellar boundary) and the cluster area without gaps (from the very centre to the border) exists so far in  $\sigma$  Orionis.

I extend the study of the brightest stars of the cluster shown in Caballero (2007a) down to the hydrogen-burning mass limit and beyond. I start out from a correlation between the 2MASS and DENIS catalogues within the environment of the Virtual Observatory<sup>1</sup> and a bibliographic search of confirmed cluster members, and support them with spectroscopic and pho-



**Fig. 1.** Inverse-colour DSS-1 blue-band (photograph  $B_I$ ) image centred in  $\sigma$  Ori AB. Its size is  $1.5 \times 1.5 \text{ deg}^2$ . North is up and east is left. The correlated 2MASS/DENIS sources are marked with (blue) dots. Compare this Figure with fig. 1 in Caballero (2007a). Colour versions of all the Figures are available in the electronic publication.

tometric data from the X-ray region to  $120 \mu\text{m}$  when available. The outcome of this work is the Mayrit catalogue, that comprises the majority of the stars and high-mass brown dwarfs of  $\sigma$  Orionis.

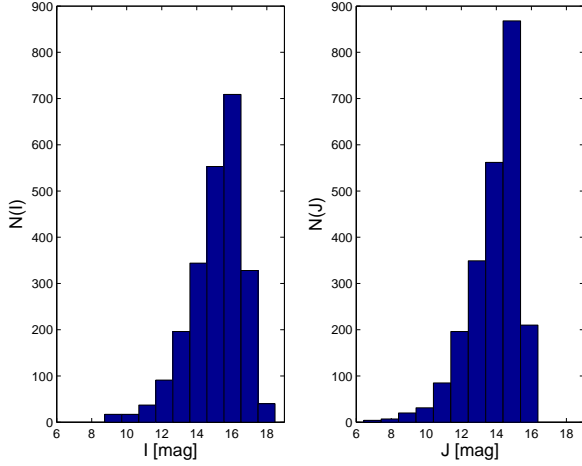
## 2. Analysis and results

### 2.1. The 2MASS/DENIS correlation

The correlation between the Two-Micron All Sky Survey (2MASS) Catalog of Point Sources (Skrutskie et al. 2006) and the third release of the Deep Near Infrared Survey of the Southern Sky (DENIS) database (Epchtein et al. 1997; DENIS Consortium 2005) were performed with the cross match tool of the Aladin sky atlas. I used a cross-match threshold of 1 arcsec, which is more than 10 times wider than the expected astrometric errors of the catalogues. The methodology and the survey area, a circle of 30 arcmin radius centred on  $\sigma$  Ori AB, are identical to those in Caballero (2007a), where further details can be found. The survey area and its surroundings are shown in Fig. 1.

Of the 5721 2MASS sources in the  $2830 \text{ arcmin}^2$ -wide area, 4951 ( $\sim 87\%$ ) were correlated with DENIS sources. Most of the 770 non-correlated 2MASS sources are very faint and are expected to have optical counterparts fainter than the DENIS completeness. To avoid subsequent problems associated to high photometric uncertainties (e.g. faint blue sources with apparent red colours and vice versa), I only considered 2MASS sources

<sup>1</sup> See <http://www.ivoa.net>.

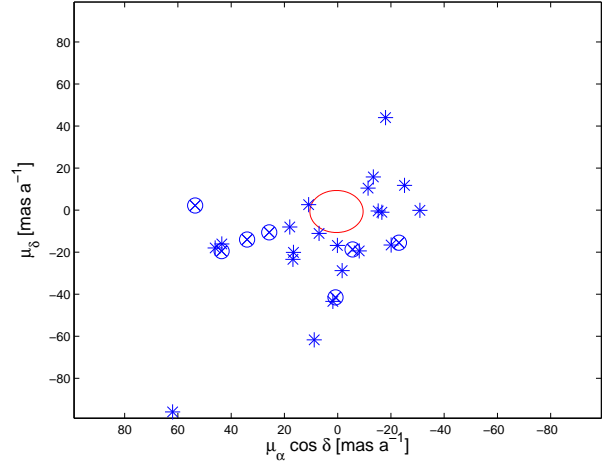


**Fig. 2.** Histograms of the number of sources as a function of DENIS  $I$  (left) and 2MASS  $J$  magnitudes (right).

with photometric errors  $\delta K_s < 0.1$  mag. With this restriction, the final sample size was 2332 optical/near-infrared sources.

The histograms of the number of sources as a function of magnitude in the DENIS  $I$  and 2MASS  $J$  passbands are shown in Fig. 2. The bulk of the correlated sources have  $I$ - and  $J$ -band magnitudes in the intervals  $\sim 12$ – $17$  mag and  $\sim 11$ – $16$  mag, respectively. The number of sources peaks at  $I \sim 16$  mag and  $J \sim 15$  mag (and at  $H \sim K_s \sim 14$  mag), which is expected from the increasing number of faint stars and the completeness and limiting magnitudes of the DENIS and 2MASS catalogues (DENIS  $I_{5\sigma} = 18.0$  mag; 2MASS  $J_{3\sigma} = 17.1$  mag,  $K_{s,3\sigma} = 14.3$  mag). Both surveys are complete at magnitudes brighter than  $I \approx 16.5$  mag,  $J \approx 14.6$  mag and  $K_s \approx 12.8$  mag, which are the magnitudes of the (non-reddened) faintest stars and brightest brown dwarfs in  $\sigma$  Orionis (Caballero et al. 2007). Besides, 98 % (91 %) of the correlated sources have  $I - J$  colours in the interval  $0.4 \text{ mag} \lesssim I - J \lesssim 2.5 \text{ mag}$  ( $0.7 \text{ mag} \lesssim I - J \lesssim 2.1 \text{ mag}$ ), which are typical of normal dwarfs. Since the galactic latitude of the cluster is  $b = -17.3$  deg, a large contamination by red giants is not expected (Caballero, Burgasser & Klement, in prep.).

Other optical catalogues offered by the Virtual Observatory that could have been correlated with 2MASS are, for example, the United States Naval Observatory USNO-B1.0 (Monet et al. 2003), the SuperCOSMOS Sky Survey SSS (Hambly et al. 2001), the Guide Star Catalogue<sup>2</sup> GSC-II or the Carlsberg Meridian Catalog<sup>3</sup> CSC14. All of them are digitisations of Schmidt photographic plates. In spite of possible photometric uncertainties (see Section 2.3), the DENIS catalogue is deeper than them. Besides, it is a CCD-based survey, which easily allows to transform magnitudes into fluxes and warranties linearity within the dynamical range of the survey. Photographic magnitudes, on the contrary, are not reliable at the faintest (es-



**Fig. 3.** Proper-motion diagram ( $\mu_\delta$  vs.  $\mu_\alpha \cos \delta$ ) of foreground stars with  $\mu > 10 \text{ mas a}^{-1}$ . Non-cluster members from the literature and new non-cluster members from this work are shown with asterisks (“\*”) and tensorial product symbols (“⊗”), respectively. The threshold used by Caballero (2007a) to separate Ori OB 1b members from stars with high tangential velocities is marked with a big ellipse. The high-proper-motion star G 99–20 (LP 598–162;  $\mu = 288 \text{ mas a}^{-1}$ ) is not shown for the sake of clarity.

pecially GSC-II and CSC14) and brightest (especially SSS<sup>4</sup>) magnitudes. An optimum alternative to DENIS would be using USNO-B1 and SSS at the faintest and brightest magnitudes, respectively. This option still has an important drawback with respect to DENIS (apart of a complex implementation): the incomplete coverage of the cluster centre due to the glare of  $\sigma$  Ori AB. The inner 3 arcmin-radius circle contains about 40 cluster members and candidates and an important fraction of the cluster total mass (Caballero 2007a, 2007b). On the one hand, DENIS tabulates optical data for *all* the sources with near-infrared magnitudes  $J \lesssim 16.0$  mag from the outer radius of the survey at 30 arcmin to a few arcseconds to the Trapezium-like star system; more than 60 DENIS sources are in the central circle of radius 3 arcmin. On the other hand, USNO-B1 tabulates only *three* sources in the central circle (the OB-type stars  $\sigma$  Ori AB, D and E), and is complete and relatively free of glare artifacts only at more than  $\sim 6$  arcmin. The effect of “glare incompleteness” is also detectable surrounding other bright early-type stars in the area with known nearby companions (e.g. HD 294271; Caballero 2005).

There are other non-virtual observatory optical data covering the  $\sigma$  Orionis region, but they are not available to the author (e.g. Sherry et al. 2004), are too deep (i.e. all high- and intermediate-mass stars are saturating; e.g. Béjar et al. 2004a, 2004b) or on purpose avoided to survey the cluster centre (e.g.

<sup>2</sup> Space Telescope Science Institute and Osservatorio Astronomico di Torino.

<sup>3</sup> Copenhagen University Obs., Institute of Astronomy, Cambridge, UK, and Real Instituto y Observatorio de la Armada en San Fernando

<sup>4</sup> The SSS/2MASS correlation gives rather blue optical/near-infrared colours, by up to 2 mag ( $I_{\text{SSS}} - K_s$ ), with respect to observational (Bessel & Brett 1988) and theoretical (Schaller et al. 1992; Baraffe et al. 1998; Girardi et al. 2000) star sequences for all objects brighter than  $I \approx 14$  mag.

Caballero 2006). To sum up, the DENIS/MASS combination provides the most suitable optical/near-infrared correlation in the area; this combination is, nevertheless, incomplete for magnitudes brighter than  $I \sim 6$  mag and offers incorrect magnitudes of objects brighter than  $I \approx 10$  mag due to saturation and non-linear effects. To enhance the optical data from the DENIS catalogue, I have collected the  $I$  magnitudes of the 18 brightest stars in the area from the USNO-B1 catalogue and from Caballero (2007b). Likewise, the 2MASS  $J$  and  $H$  photometry of  $\sigma$  Ori AB is also affected by saturation, and I have used the respective values provided by Johnson et al. (1966). These incorporations led to simultaneously investigate in the survey all the sources with  $J$ -band magnitudes in the range 4.5–15.5 mag. Therefore, all the cluster stars and many of the high-mass brown dwarfs can be identified in the optical/near-infrared data.

## 2.2. Membership classification

### 2.2.1. Known cluster members

As a first step of the cluster member selection, a list of confirmed cluster members from the literature with 2MASS/DENIS counterpart was made up, given in Table A.1. A confirmed cluster member must display at least one of the following features of youth, characteristic of  $\sim 3$  Ma-old stars or brown dwarfs:

- early spectral type (“OB”): O-, B- and early-A-type stars taken from Caballero (2007a);
- $\text{Li I } \lambda 6707.8 \text{ \AA}$  in absorption (“Li I”): mid- and late-type pre-main sequence stars mostly taken from Wolk (1996), Zapatero Osorio et al. (2002a), Kenyon et al. (2005) and Caballero (2006);
- strong and/or broad  $\text{H}\alpha$   $\lambda 6562.8 \text{ \AA}$  line in emission (“H $\alpha$ ”): accretors and emission stars and brown dwarfs mostly taken from Haro & Moreno (1953; Haro objects), Wiramihardja et al. (1989, 1991; Kiso objects), Zapatero Osorio et al. (2002a), Weaver & Babcock (2004) and Caballero (2006);
- features of low gravity (“low g”): stars and brown dwarfs with weak alkali absorption lines (in particular, the  $\text{Na I } \lambda 8183, 8195 \text{ \AA}$  doublet) taken from Burningham et al. (2005);
- spectral energy distribution characteristic of objects with discs (“Class I”, “II”, “trans. disc”, “ev. disc”, “mIR”): Class I and Class II objects and stars with evolved or transition discs mostly taken from Oliveira & van Loon (2004) and Hernández et al. (2007);
- very strong X-ray emission (“XX”, “XXX”): optical/near-infrared counterparts of: (i) X-ray sources with count rates in the intervals  $0.01\text{--}0.10 \text{ s}^{-1}$  (“XX”) or  $>0.10 \text{ s}^{-1}$  (“XXX”) in the EPIC/*XMM-Newton* observations by Franciosini et al. (2006), or of (ii) X-ray sources out of the EPIC/*XMM-Newton* survey area detected by at least two independent surveys carried out with the space observatories *Einstein*, *ASCA* and *ROSAT* and with count rates  $>0.01 \text{ s}^{-1}$  in the WGACAT/*ROSAT* catalogue, mostly taken from Harris et al. (1994), Nakano et al. (1999) and White et al. (2000).

Table A.1 provides the Mayrit identifications of the 241 confirmed young stars and brown dwarfs in  $\sigma$  Orionis that I was able to identify among the correlated 2MASS/DENIS sources. It also gives some of their alternative names from the literature, their features of youth and corresponding abbreviated bibliographic references. The complete reference list is given in Table A.7. Some additional features of youth are also indicated in Table A.1 (“Em.”, “Ca II”: emission lines different from H $\alpha$ ; “Si”: silicon features in mid-infrared spectra, characteristic of dust coagulation in protoplanetary discs; “debris disc”: flux excess detected only at the  $24 \mu\text{m}$  passband of MIPS/*Spitzer*; “X-flare”: flares detected at 0.2–2.0 keV; “jet”: central source associated to a Herbig-Haro object; “nebular”: nebular appearance of the H $\alpha$  emission; “X”: stars with EPIC/*XMM-Newton* count rates in the interval  $0.0005\text{--}0.01 \text{ s}^{-1}$ ). Some marginally-detected features are marked with a question mark. Of the 241 identified cluster members, 187 have at least two known features of youth (and 95 have three or more features). Stars and brown dwarf candidates with only spectral-type determination from low-resolution spectroscopy have not been considered as confirmed cluster members.

There are also several cluster member candidates, like Kiso A–904 69 ([WB2004] 17), Haro 5–28 (Kiso A–0904 89), IRAS 05352–0227 or Haro 5–24, with published strong H $\alpha$  emission and magnitudes that would make them to be detectable in this survey. However, because of the large errors in their coordinates, I was not able to identify them.

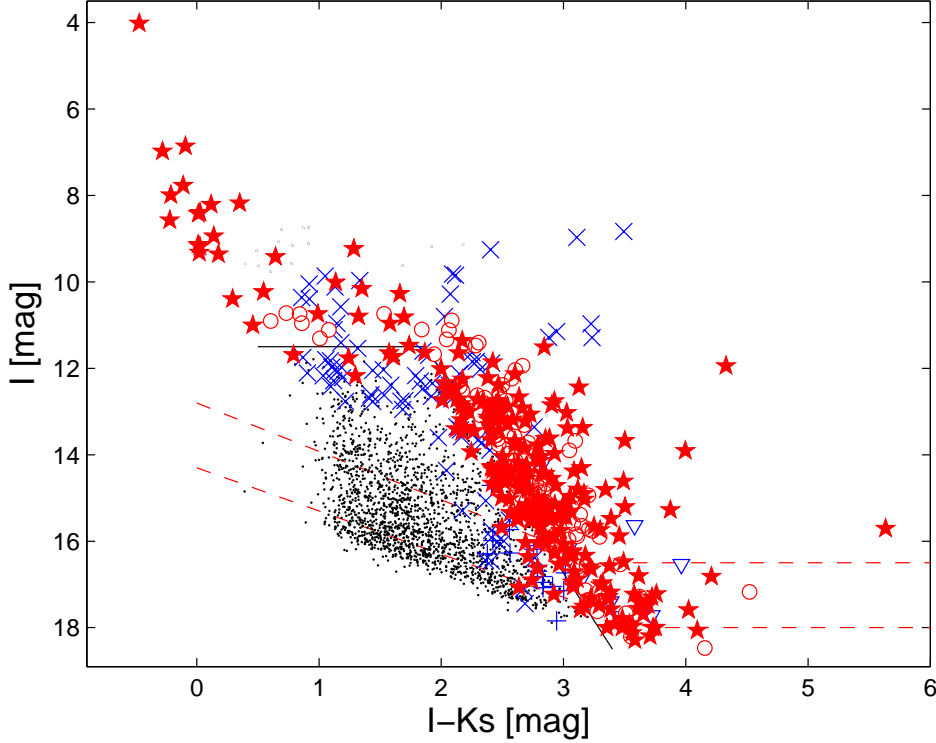
The Mayrit designation of the  $\sigma$  Orionis cluster members and candidates used throughout this work follows the nomenclature introduced by Caballero (2007b).

### 2.2.2. Fore- and background stars and galaxies

To complement the list of known cluster members, I compiled 85 non-cluster member stars and 17 galaxies among the correlated 2MASS/DENIS sources, shown in Table A.2. Nine stars are presented here for the first time, while the remaining non-cluster members were taken from the literature. In particular, the latter stars are:

- bright stars with high tangential velocity and K- and M-type foreground stars taken from Caballero (2007a); and
- stars whose high-quality spectra show no lithium in absorption (“no Li I”), no low gravity features in the alkali lines (“no low g”) and/or discordant radial velocity with respect to the cluster systemic radial velocity (“no  $V_r$ ”), taken from Kenyon et al. (2005), Burningham et al. (2005) and Caballero (2006).

I also got the proper motion tabulated by USNO-B1 (very similar to those tabulated by SSS and NOMAD1 – Zacharias et al. 2004) for all the correlated 2MASS/DENIS sources brighter than  $I = 12.5$  mag that were not investigated in the Tycho-2/2MASS correlation by Caballero (2007a). I estimate that the average error of the USNO-B1 measurements in the investigated magnitude interval is  $\delta\mu \gtrsim 5 \text{ mas a}^{-1}$ . There are, however, some stars with relatively high proper motions and larger uncertainties (e.g. SO430116, with the second highest proper



**Fig. 4.**  $I$  vs.  $I - K_s$  colour-magnitude diagram in the survey area. Filled (red) stars: stars and brown dwarfs with known features of youth from the literature; open (red) circles: photometric candidate cluster stars and brown dwarfs; (blue) pluses: galaxies; open (blue) down triangles: reddened sources in the northeastern cloud; (blue) x-marks: fore- and background stars; tiny (black) dots: unresolved galaxies, probable fore- and background stars and cluster stars and brown dwarfs with blue  $I - K_s$  colours for their  $I$  magnitudes; solid (black) line: criterion for selecting candidate cluster stars and brown dwarfs without known features of youth; dashed (red) lines: approximate completeness and detection limits of the survey.

motion in the area after G 99–20, has a SSS  $\mu = (+103 \pm 5, -123 \pm 5) \text{ mas a}^{-1}$ , while USNO-B1 tabulates a proper motion  $\sim 30\%$  less). Of the 85 non-cluster members, 29 have proper-motion moduli larger than  $10 \text{ mas a}^{-1}$ , which was the value to separate young stars and candidate Ori OB 1b association members from probable foreground stars with larger tangential velocities in Caballero (2007a). The proper-motion diagram shown in Fig. 3 illustrates the study of the star tangential velocities. Seven of the nine new non-cluster members firstly listed here have proper motions  $\mu \gtrsim 20 \text{ mas a}^{-1}$ . The remaining two new non-cluster members, with proper motions consistent with membership in  $\sigma$  Orionis, probably are foreground K- or early-M-type stars because they have very red colours, but they are much brighter than cluster members of similar expected spectral type and do not show any feature characteristic of T Tauri stars. These two stars are 2MASS J05400217–0253423 ( $I = 10.97 \pm 0.06 \text{ mag}$ ,  $K_s = 7.74 \pm 0.03 \text{ mag}$ ) and 2MASS J05390143–0253431 ( $I = 11.28 \pm 0.03 \text{ mag}$ ,  $K_s = 8.40 \pm 0.03 \text{ mag}$ ). Table A.2 gives the 2MASS designations of all the fore- and background stars, alternative names if they exist, a flag indicating if they have been spectroscopically studied (“Sp.” = Yes/No), their USNO-B1 proper motions if they are larger than  $10 \text{ mas a}^{-1}$ , remarks and abbreviated references (see again Table A.7 for complete refer-

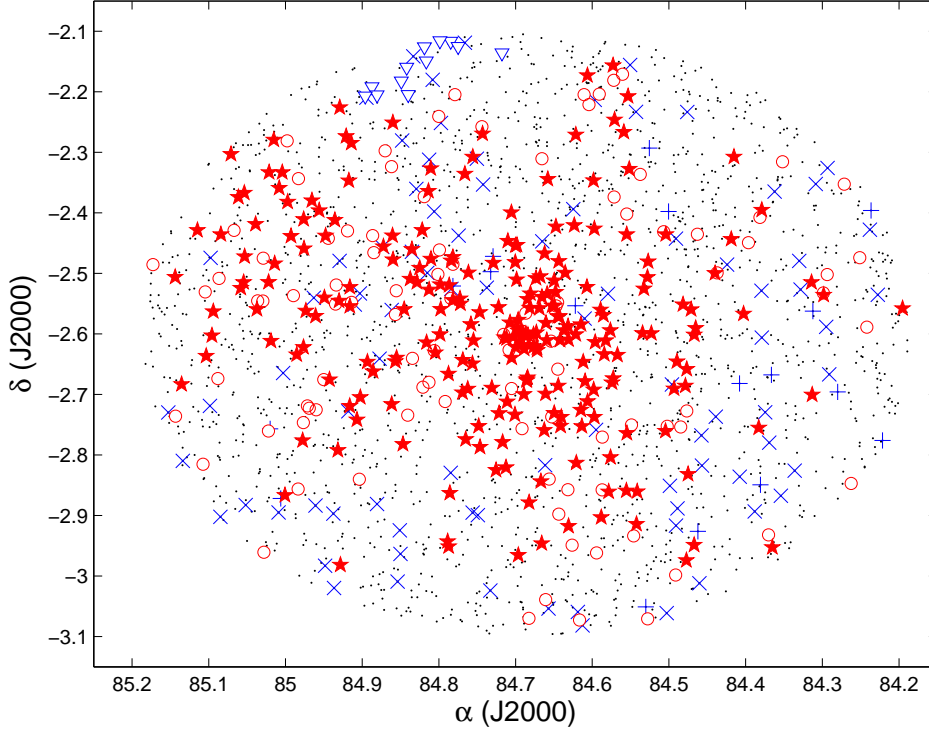
ences). The nine new non-cluster members have a blank in the references column.

In Table A.3, I list the 2MASS designations of 18 galaxies found in the survey area. All except one (2E 1448, which is a very strong X-ray emitter; Caballero & López-Santiago, in prep.) are tabulated in the Final Release of 2MASS Extended Sources (2MASS 2003). Some of galaxies were also identified in the *Spitzer* Space Telescope study in  $\sigma$  Orionis by Hernández et al. (2007). As an additional test, I checked the extended FWHMs of the ten reddest galaxies ( $J - K_s \gtrsim 1.4 \text{ mag}$ ) using the SSS digitisations.

### 2.2.3. Candidate young stars and brown dwarfs

I have selected 109 cluster member candidates without membership information based on their position with respect to the 241 confirmed cluster members in the  $I$  vs.  $I - K_s$  colour-magnitude diagram shown in Fig. 4. The cluster members with known features of youth define a quite broad photometric sequence in the diagram. I have classified as candidate cluster stars and brown dwarfs those correlated 2MASS/DENIS sources that are neither known cluster members (Section 2.2.1) nor non-cluster members (Section 2.2.2), and that fall redwards of the solid line shown in Fig. 4 or are brighter than  $I$





**Fig. 5.** Spatial distribution of the investigated sources. The symbol code is as in Fig. 4.

= 11.5 mag. The solid line leaves redwards of it  $\sim 75\%$  of the confirmed cluster members. All the stars in the area brighter than  $I = 9.5$  mag are confirmed cluster members.

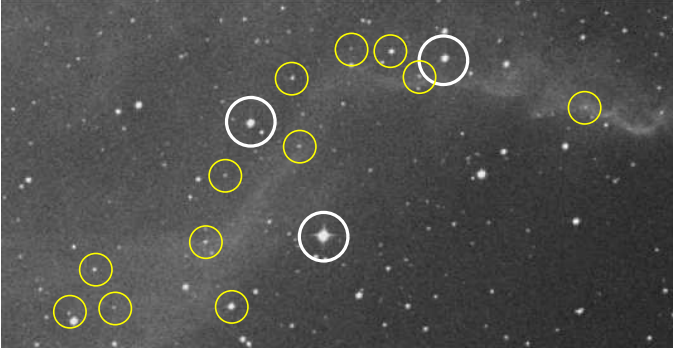
Fig. 1 shows that the survey area partially overlaps with a nebulousity that forms an extension of the Orion B cloud associated to the Alnitak-Horsehead Nebula-IC 434-Flame Nebula complex (Alnitak =  $\zeta$  Ori). Twelve candidate cluster members to the northeast of the survey area, together with three known non-cluster members with spectroscopic information, fall exactly below the densest (filament-shaped) part of the nebulousity. This area is shown in detail in Fig. 6 (see also the upper part of fig. 2 in Hernández et al. 2007). The cloud shred also coincides with an alignment of mid-infrared sources in the *IRAS* Catalogue of Point Sources and in the *IRAS* Serendipitous Survey Catalog without known optical or near-infrared counterparts (IPAC 1986; also in the *IRAS* Point Source Reject Catalog). Although some of these sources might be bona-fide, embedded young sources associated to the filament, I list them in Table A.4 as probable reddened sources that do not belong to the  $\sigma$  Orionis cluster. Three of them also were photometric cluster member candidates in the work by Sherry et al. (2004). Besides, Béjar et al. (2004a) proposed that an overdensity of *IZ*-band photometric cluster members to the northeast of  $\sigma$  Orionis could be associated to a hypothetical cluster surrounding Alnitak. The existence of the nebulousity adds further complexity to the topic. The solution of this dilemma requires further spectroscopy.

Taking into account the 109 sources redwards of the solid line in Fig. 4 and the 12 probable reddened sources in

Table A.4, then 97 reliable candidate cluster members without membership information, of which 40 are new, remain from the survey. Their designations and alternative names, together with remarks and references, are provided in Table A.5. In the remarks column it is indicated, if known, spectral type, period of photometric variability and X-ray emission (“X”: count rate in the interval  $0.0005\text{--}0.01\text{ s}^{-1}$  in Franciosini et al. 2006; “X?”: source possibly associated to X-ray events in the *WGACAT/ROSAT* catalogue by White et al. 2000). The marginal detections of youth features (Li I,  $H\alpha$ , low  $g$ ) are indicated with a question mark.

The pictogramme of the spatial distribution of confirmed cluster members, non-cluster members, galaxies and candidate cluster members is displayed in Fig. 5. Since most of spectroscopic, mid-infrared and X-ray follow-ups are focused on the cluster centre, photometric candidate cluster members do not concentrate towards the cluster centre as sharply as confirmed cluster members do<sup>5</sup>.

<sup>5</sup> Caballero (2007c) used a previous version of the Mayrit catalogue to investigate the spatial distribution of stars and brown dwarfs in  $\sigma$  Orionis. The only difference was that the X-ray galaxy 2E 1456 was considered as a photometric cluster member candidate. Even accounting for this difference, the results of that paper (clustering parameter  $Q \approx 0.88$ , volume density  $\rho(r) \propto r^{-2}$ , mass-dependent radial distribution, azimuthal asymmetry) remain unchanged.

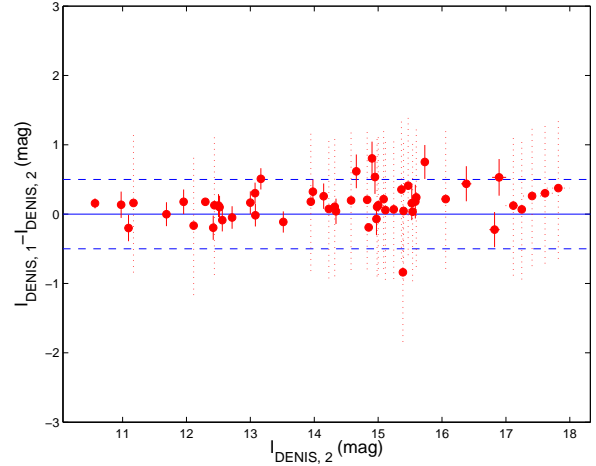


**Fig. 6.** Part of the ESO Red (photographic  $R$ ) image of the northeastern nebulosity discussed in the text. The three known non-cluster members are marked with big thick (white) circles. The 12 reddened sources previously considered as candidate cluster members are marked with small thin (yellow) circles. The gas emission is due to  $H\alpha$  (mostly) and  $[\text{N II}] \lambda\lambda 6548.0, 6583.4 \text{ \AA}$ . North is up and east is to the left; approximate size is  $17 \times 7 \text{ arcmin}^2$ .

### 2.3. Refinement of optical photometry

As a final step of the analysis, I improved the DENIS  $I$  data of the correlated sources. The DENIS database sometimes tabulates two or more detections separated by only  $\sim 0.1\text{--}0.3 \text{ arcsec}$  with slightly different magnitudes. A visual inspection shows that the detections are associated to the same source. Often, one or some detections have very large photometric uncertainties, of up to  $\delta I = 1.00 \text{ mag}$ . During the 2MASS/DENIS cross match, only one DENIS source (the nearest one to the 2MASS counterpart) was correlated, which may have larger photometric errors than the other sources. Therefore, I investigated the possible multiple detections in the DENIS database of the 241 confirmed cluster members and the 97 candidate cluster members. Of them, 55 sources ( $\sim 16\%$ ) have such multiple (double) detections,  $I_1$  and  $I_2$ .

The difference between the two tabulated  $I$ -band magnitudes,  $I_1$  and  $I_2$ , as a function of the most accurate measurement is shown in Fig. 7. While the mean of the quantity  $(\delta^2 I_1 + \delta^2 I_2)^{1/2}$ , that measures the combined photometric uncertainties, is  $0.56 \text{ mag}$ , the standard deviation of the difference  $I_1 - I_2$  is only  $0.26 \text{ mag}$ . There are only three objects with  $I_1 - I_2 > 0.56 \text{ mag}$  (V603 Ori, Haro5–18 and SSW 34), of which two are known to be intense accretors and one is known to be a photometric variable (Haro & Moreno 1953; Salukvadze 1987; Wiramihardja et al. 1989; Andrews et al. 2004). These values must be compared with typical uncertainties of normalised magnitudes from plate digitisations, of no less than  $\sim 0.3 \text{ mag}$  (Hambly et al. 2001). These facts indicate that: (i) the large DENIS photometric uncertainties in the optical (especially  $\delta I = 1.00 \text{ mag}$ ) are overestimated; and (ii) the uncorrected DENIS magnitudes can still be used with uncertainties at the  $0.26 \text{ mag}$  level, except for high-amplitude variables. The latter objects have, however, extremely red  $J - K_s$  colours (of  $2.14 \pm 0.03 \text{ mag}$  in the case of V603 Ori) and are easy to recognise among foreground and background sources. Therefore, the DENIS multiple detections barely affect my selection criterion.



**Fig. 7.**  $I_1 - I_2$  vs.  $I_2$  of stars with double detections in the DENIS database. The errorbars associated to stars with photometric uncertainties  $\delta I = 1.00 \text{ mag}$  are plotted with dotted lines. Horizontal lines denote  $I_1 - I_2 = 0.0 \text{ mag}$  (solid) and  $I_1 - I_2 = \pm 0.5 \text{ mag}$  (dashed).

### 2.4. The Mayrit catalogue

Finally, Table A.6 tabulates the Mayrit designations, the most accurate DENIS  $I$ -band and 2MASS  $JHK_s$  magnitudes and J2000 coordinates of the 338 cluster members and member candidates that constitute the Mayrit catalogue. The last column indicates with a filled star (“★”) if the object is a confirmed cluster member with at least one known feature of youth. Of the 338 objects, only 16 have no cluster membership information and are fainter than the completeness of the search; likewise, only 3 member candidates are fainter than the detection limit. However, the numbers of confirmed cluster members fainter than the completeness (43) and detection (15) limits are larger. The correspondingly larger photometric uncertainties might explain the width of the bottom of the cluster sequence.

The catalogue has advantages and disadvantages. On the one hand, its most noticeable pros are:

- comprehensiveness: tabulated Mayrit sources outnumber previous studies in  $\sigma$  Orionis;
- very wide investigated magnitude interval: it translates into a very wide mass interval, that ranges four orders of magnitude, from the  $18+12 M_\odot$  of  $\sigma$  Ori AB to the  $\sim 0.03 M_\odot$  of B05 2.03–671 (Caballero & Chabrier, in prep.). The cluster stellar and substellar populations had been traditionally studied in mass bins;
- continuity and symmetry of the survey area: on the contrary to previous searches in the cluster, there are no gaps between detectors or asymmetric layouts.
- data homogeneity: only DENIS and 2MASS astrometric and photometric data are tabulated for all the objects (except for a few bright stars – see Section 2.1);

On the other hand, some disadvantages of the Mayrit catalogue are:

- extreme heterogeneity of the list of confirmed cluster members: I have examined several dozens works, including spectroscopy, mid-infrared photometry and X-ray emission, for making up the catalogue;
- moderate size ( $0.78\text{deg}^2$ ): a search radius larger than 30 arcmin would lead to survey the Horsehead Nebula-IC 434 complex, where the extinction is very high and background objects are reddened (just as in Section 2.2.3). The variable extinction would make the cluster member selection to be very difficult;
- incompleteness and contamination, that depend on the brightness interval and the spatial distribution of young stars in the Ori OB 1 b association. Both incompleteness and contamination of this catalogue will be discussed in a future work.

### 3. Summary

The  $\sim 3\text{Ma}$ -old  $\sigma$  Orionis cluster is a new cornerstone for observational and theoretical studies with the aim to understand the general processes of collapse and fragmentation of a molecular cloud, formation of stars and substellar objects and evolution of circumstellar discs. I present a comprehensive, rather complete catalogue of cluster members that can be used for further studies in  $\sigma$  Orionis (e.g. spatial distribution, multiplicity, mass function and frequency and characterisation of discs). This investigation covers the whole stellar and part of the brown dwarf domain of the cluster from  $\sim 18$  to  $\sim 0.03 M_{\odot}$ .

I have performed an  $IK_s$  survey in a 30 arcmin-radius region centred on the O9.5V+B0.5V binary  $\sigma$  Ori AB using the Aladin tool and optical and near-infrared data from the DENIS and 2MASS catalogues. The photometric data have been complemented with information from the literature regarding the membership of known sources. I have compiled a list of 241 cluster stars and brown dwarfs with known features of youth (e.g. early spectral types, Li I in absorption, near and mid infrared excess attributed to surrounding discs, strong X-ray and H $\alpha$  emissions), 85 fore- and background stars with astrometric and spectroscopic data (nine are new), 18 galaxies with extended FWHMs and 12 probable reddened sources in a nebulousity northeastern of the survey area, associated to the Horsehead Nebula. From the  $I$  vs.  $I - K_s$  diagram, I have selected 97 additional photometric cluster member candidates without reliable membership information. This makes a list of 338  $\sigma$  Orionis members and member candidates, the Mayrit catalogue, of which more than 70 % display features of extreme youth. I tabulate precise coordinates,  $IJK_s$  and supplementary information of all the cluster members, member candidates and non-members.

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## Appendix A: Tables A.1 to A.7

**Table A.1.** Confirmed young stars and brown dwarfs in  $\sigma$  Orionis.

Name	Alternative name(s)	Feature(s) of youth	References
Mayrit AB	$\sigma$ Ori A + B + IRS1, HD 37468	OB, mIR, XXX	FA04,MKK43,Fr06,Ca07a
Mayrit 42062	$\sigma$ Ori E, V1030 Ori	OB, XXX	GW58,Le68,HHG89,Ca07a
Mayrit 13084	$\sigma$ Ori D, HD 37468D	OB, X?	CP18,Ca07a,Ca07b
Mayrit 1548068	HD 37699, 1AXG J054020–0225	OB, mIR, XX	Ne43,Gr92,Ca07a
Mayrit 524060	HD 37564, BD–02 1330	OB, debris disc, X	TO91,Ca07a,He07
Mayrit 208324	HD 294271, BD–02 1324	OB	SC71,Gu81,Ca07a
Mayrit 306125	HD 37525 AB, BD–02 1328	OB, XX	SC71,Ni76,Fr06,Ca07a
Mayrit 182305	HD 294272 A, BD–02 1323	OB, X	SC71,Fr06,Ca07a
Mayrit 863116	RX J0539.6–0242 AB	Li I, H $\alpha$ , XX	Al96,Ca07a,Fr06
Mayrit 1116300	HD 37333, BD–02 1319	OB, Si II	Gu81,Re88,GC93,Ca07a
Mayrit 189303	HD 294272 B, BD–02 1323C	OB, X	SC71,Gu81,Ca07a
Mayrit 960106	V1147 Ori, HD 37633	OB, $\alpha^2$ CVn, XX, Si	JB81,No84,CR98,Ca07a
Mayrit 1659068	HD 294297	Li I	CSL95,Ca07a
Mayrit 11238	$\sigma$ Ori C, BD–02 1326C	OB	Ca07a
Mayrit 1359077	HD 37686, BD–02 1335	OB	WH78,Gu81,Ca07a
Mayrit 783254	2E 0535.4–0241, NX 3	XXX	Ha94,Fr06
Mayrit 1227243	HD 294275, BD–02 1317	OB	WH78,Gu81,Ca07a
Mayrit 1288163	HD 37545, BD–03 1165	OB, debris disc	WH78,Gu81,Ca07a,He07
Mayrit 1366055	HD 294298, 2E 0537.4–0224	Li I, XX	CSL95,Na99,Ca07a
Mayrit 1285339	HD 294268, BD–02 1321	Li I, H $\alpha$ , mIR, X	G-L90,OvL04,Ca07a,He07
Mayrit 377264	IRAS 05358–0238	Class I, low g, Si	OvL04,He07
Mayrit 1160190	HD 294279	OB	Gu81,Ca07a
Mayrit 114305	GSC 04771–01147 AB	Li I, H $\alpha$ , XXX, ev. disc	Wo96,Fr06,He07
Mayrit 789281	2E 0535.3–0235	Li I, H $\alpha$ , XXX	Ca06,Fr06
Mayrit 1106058	2E 0537.2–0227 AB	XX	Ha94,Wh00
Mayrit 717307	[W96] 4771–0950	Li I, X	Fr06,Ca07a
Mayrit 521199	TX Ori, Haro 5–12	H $\alpha$ , Ca II, mIR, X, Si	HM53,HR72,OvL04,He07
Mayrit 528005	[W96] 4771–899 AB	Li I, H $\alpha$ , XXX, II	Wo96,ZO02a,Fr06,He07
Mayrit 521210	HD 294273, BD–02 1322	OB	Gu81,Ca07a
Mayrit 1679078	[NYS99] C–16	XX	Na99,Wh00,Ue01
Mayrit 489196	TY Ori, AN 122.1904	H $\alpha$ , mIR	HR72,OvL04,He07
Mayrit 615296	2E 0535.6–0223, NX 8	XX	Ha94,Fr06
Mayrit 203039	[W96] 4771–1049	Li I, H $\alpha$ , XX	Wo96,Fr06
Mayrit 1564058	Haro 5–38, Kiso A–0904 101	H $\alpha$ , II	HM53,Wi89,He07
Mayrit 931117	RW Ori, Haro 5–29, NX 175	H $\alpha$ , II, X	HM53,He07,Fr06
Mayrit 459340	StHA 50	H $\alpha$ , OB?	St86,DK88,Ca07a
Mayrit 634052	[W96] 4771–0598, NX 156	XX, debris disc	Fr06,He07
Mayrit 750107	[W96] r053932–0239	Li I, X	Ca06,Fr06
Mayrit 822170	RX J0538.9–0249	Li I, H $\alpha$ , XX	Ca06,Fr06
Mayrit 1415279	OriNTT 429 AB	Li I	Lee94,Ca06
Mayrit 207358	[W96] 4771–1055	Li I, XX	Ca06,Fr06
Mayrit 958292	SO210868	Li I	Ca06
Mayrit 969077	2E 0537.2–0233	Li I, H $\alpha$ , XX	Ha94,Mo96,Wh00,Ca06
Mayrit 1626148	V511 Ori, Haro 5–33, Kiso A–0976 358	H $\alpha$	HM53,Wi91
Mayrit 1223121	V606 Ori, Haro 5–34	Li I, H $\alpha$ , Em, II	HM53,Wi91,Ca06,He07
Mayrit 105249	[W96] rJ053838–0236	Li I, H $\alpha$ , XX	Wo96,ZO02a,Ca06,Fr06
Mayrit 1471085	Kiso A–0904 105, [YKK2000] A1	Li I, H $\alpha$ , Em, X-flare	Wi89,Na99,YKK00,Ca06
Mayrit 1396071	[NYS99] C–09	XX	Na99,Wh00
Mayrit 591158	[W96] 4771–0026, NX 119	Li I, Em, X	Ca06,Fr06
Mayrit 344337	2E 0536.0–0232, [W96] 4771–1097	Li I, H $\alpha$ , XXX	Wo96,ZO02a,Ca06,Fr06
Mayrit 397060	V507 Ori, Haro 5–19	H $\alpha$ , trans. disc, X	HM53,Wi89,WB04,He07
Mayrit 285331	[W96] rJ053835–0231, NX 60	XX	Fr06
Mayrit 622103	BG Ori, Haro 5–23	Li I, H $\alpha$ , II, X	HM53,Ca06,Fr06,He07

**Table A.1.** Confirmed young stars and brown dwarfs in  $\sigma$  Orionis (cont.).

Name	Alternative name(s)	Feature(s) of youth	References
Mayrit 707162	[W96] rJ053859–0247 AB	Li I, H $\alpha$ , Em, II, X	Ca06, Fr06, He07
Mayrit 260182	[W96] 4771–1051	Li I, H $\alpha$ , XX, II	Wo96, ZO02a, Fr06, He07
Mayrit 1374283	SO211394	Li I	Ca06
Mayrit 1245057	V605 Ori AB, Haro 5–31	H $\alpha$ , trans. disc	HM53, Wi89, He07
Mayrit 157155	[W96] rJ053849–0238, SWW 85	Li I, H $\alpha$ , XX	Wo96, ZO02a, Ca06, Fr06
Mayrit 596059	Haro 5–21, Kiso A–0904 81	H $\alpha$ , II, X	HM53, Wi89, Fr06, He07
Mayrit 1248183	SWW 145	Li I	Ca06
Mayrit 1541051	[NYS99] C–05	Li I, H $\alpha$ , XX	Na99, Wh00, Ca06
Mayrit 1233042	RV Ori, Haro 5–26	Li I, H $\alpha$ , II	HM53, Wi89, Ca06, He07
Mayrit 97212	[W96] rJ053841–0237, [WB2004] 22	Li I, H $\alpha$ , XXX	Wo96, ZO02a, WB04, Fr06
Mayrit 1269083	V608 Ori, Haro 5–39, HH 447	Li I, H $\alpha$ , mIR, jet	HM53, Re98, An04, OvL04
Mayrit 348349	Haro 5–13, [W96] rJ053840–0230	Li I, H $\alpha$ , Em, II, X	Wo96, ZO02a, Ca06, He07
Mayrit 203283	[W96] rJ053831–0235	Li I, H $\alpha$ , II, X	Wo96, ZO02a, Fr06, He07
Mayrit 653170	RU Ori, Haro 5–15	Li I, H $\alpha$ , II, X	HM53, Wo96?, Ca06, He07
Mayrit 180277	[W96] rJ053832–0235b, NX 49	XX	Fr06
Mayrit 374056	[W96] 4771–1075, NX 132	Li I, H $\alpha$ , X	Wo96, ZO02a, Ca06, Fr06
Mayrit 1400036	V602 Ori, Haro 5–25, [WB2004] 38	H $\alpha$ , II	WB04, He07
Mayrit 1652046	Haro 5–35, Kiso A–0904 97	Li I, H $\alpha$	HM53, Wi89, Ca06
Mayrit 403090	[W96] 4771–1038, SWW 153	Li I, H $\alpha$	Wo96, ZO02a, Ca06
Mayrit 1207349	Haro 5–9, Kiso A–0904 70	Li I, H $\alpha$	HM53, Wi89, Ca06
Mayrit 156353	SWW 36, NX 76	XX	Fr06
Mayrit 1250070	SO110129	Li I	Ca06
Mayrit 1082013	V597 Ori, Haro 5–16	Li I, H $\alpha$ , II	HM53, Wi89, Ca06, He07
Mayrit 53049	SWW 78, NX 87	II, X, $K_s$	Fr06, He07, Ca07b
Mayrit 662301	Kiso A–0904 67, SWW 113	H $\alpha$ , II, X	Wi89, Fr06, He07
Mayrit 83207	[W96] P053842–0237, SWW 48	II, X	He07, Ca07b
Mayrit 871071	V510 Ori, Haro 5–27, HH 444	Class I, Li I, H $\alpha$ , jet	HM53, Sa71, HMS97, L–M01
Mayrit 1403026	V600 Ori, Haro 5–22	Li I, H $\alpha$ , Em	HM53, Wi89, Ca06
Mayrit 1748052	Haro 5–37, Kiso A–0904 103	Li I, H $\alpha$	HM53, Wi89, Ca06
Mayrit 797272	SWW 125, NX 1	XX, H $\alpha$ ?	Ca06, Fr06
Mayrit 1011159	SWW 61	Li I, Em, ev. disc	Ca06, He07
Mayrit 609206	V505 Ori, Haro 5–10, [W96] 4771–0041	Li I, H $\alpha$ , Em, mIR, X	HM53, Wi89, ZO02a, OvL04
Mayrit 165257	[W96] rJ053833–0236, SWW 66	Li I, H $\alpha$ , II, X	Wo96, ZO02a, He07, Fr06
Mayrit 359179	V595 Ori, Haro 5–14, SWW 97	H $\alpha$ , II, X	Sa87, SWW04, Fr06, He07
Mayrit 497054	V509 Ori, Haro 5–20, Kiso A–0904 78	Li I, H $\alpha$ , II, X	Wi89, Ca06, Fr06, He07
Mayrit 92149	[W96] R053847–0237 AB, SWW 102 AB	Li I, H $\alpha$ , II, X	Wo96, Fr06, He07
Mayrit 757219	Haro 5–8, Kiso A–0976 322	Li I, H $\alpha$ , Em, II	Wi91, Ca06, He07
Mayrit 61105	SWW 35, NX 92	XX	Fr06, Ca07b
Mayrit 1564349	2E 0535.8–0211 AB, SWW 112	Li I, XX	Ha94, Mor96, Wh00, Ca06
Mayrit 547270	Kiso A–0976 316, SWW 41	H $\alpha$ , II, X	Wi91, Ca06, Fr06, He07
Mayrit 530005	S Ori J053847.5–022711	Li I, H $\alpha$ , ev. disc	ZO02a, He07
Mayrit 734047	S Ori J053920.5–022737, SWW 100	Li I, H $\alpha$ , X	ZO02a, Ca06, Fr06
Mayrit 1080024	SWW 120, V956 Ori?	Li I	Ca06
Mayrit 203260	Haro 5–11, Kiso A–0904 71	Li I, H $\alpha$ , II	Wi89, WB04, Ca06, He07
Mayrit 1574059	Kiso A–0976 367	H $\alpha$	Wi91
Mayrit 841079	V603 Ori, HH 445, Kiso A–0976 357	Li I, H $\alpha$ , mIR, jet, X	Re98, An04, OvL04, He07
Mayrit 489165	SWW 47, NX 106	XX	Fr06
Mayrit 240355	SWW 144, NX 75	II, X	SWW04, Fr06, He07
Mayrit 1073209	[HHM07] 374	II	He07
Mayrit 1207010	SWW 196	Li I, H $\alpha$ , trans. disc	Ca06, He07
Mayrit 1446053	V607 Ori, Haro 5–36	Li I, H $\alpha$ , II	HM53, Wi89, ZO02a, He07
Mayrit 873229	Haro 5–7, SWW 180	H $\alpha$ , II	HM53, He07
Mayrit 102101	[W96] rJ053851–0236	H $\alpha$ , X, ev. disc	Wo96, Fr06, He07
Mayrit 426140	[WB2004] 25, SWW 77	II, H $\alpha$ ?, nebular	WB04, He07

**Table A.1.** Confirmed young stars and brown dwarfs in  $\sigma$  Orionis (cont.).

Name	Alternative name(s)	Feature(s) of youth	References
Mayrit 757321	SWW 233, NX 11	Li I, H $\alpha$ , II, X	Ca06,Fr06,He07
Mayrit 559009	SE 34, NX 100, [HHM07] 759	ev. disc, X	Fr06,He07
Mayrit 91024	P053847–0234, SWW 29	II	Ca07b,He07
Mayrit 387252	S Ori J053820.1–023802, SWW 169	Li I, H $\alpha$ , II, X	ZO02a,Fr06,He07
Mayrit 1279052	Haro 5–30, S Ori J053951.6–022248	Li I, H $\alpha$ , II	HM53,ZO02a,WB04,He07
Mayrit 453037	[W96] R053902–0229 AB, SWW 28, NX 126	Li I, X	Wo96,Ca06
Mayrit 234269	SWW 177, NX 39	XX	Fr06
Mayrit 380287	[W96] r053820–0234	Li I, H $\alpha$	ZO02a
Mayrit 835208	SWW 40	Li I, ev. disc	Ca06,He07
Mayrit 1245062	S Ori J053958.1–022619	Li I, H $\alpha$	ZO02a
Mayrit 165337	[HHM07] 663	II	He07
Mayrit 1016202	Kiso A–0976 326, SWW 39	Li I, H $\alpha$ , II	Wi91,Ca06,He07
Mayrit 884312	[WB2004] 13	trans. disc, H $\alpha$ ?	WB04,He07
Mayrit 1041082	V604 Ori AB, Haro 5–32	Li I, H $\alpha$ , II	HM53,Wi89,Ca06,He07
Mayrit 265282	Kiso A–0976 329, NX 33	Li I, H $\alpha$ , II, X	Wi89,ZO02a,Fr06,He07
Mayrit 590076	[W96] rJ053923–0233, SWW 185	Li I, H $\alpha$ , X	Wo96,ZO02a,Ca06,Fr06
Mayrit 68191	[W96] P053843–0237, SWW 15	II, X	Ca07b,He07
Mayrit 846052	Kiso A–0976 351 B	H $\alpha$ , II	Wi91,He07
Mayrit 687156	[WB2004] 26, SWW 122	H $\alpha$ , II	WB04,He07
Mayrit 335352	SWW 25, [HHM07] 674	II	He07
Mayrit 1446036	[OJV2004] 18, SWW 1, [KJN2005] 2	Li I, low $g$	Ke05
Mayrit 571037	[W96] rJ053907–0228, SWW 121	Li I, H $\alpha$ , X	ZO02a,Fr06
Mayrit 252059	Haro 5–18, Kiso A–0904 74	H $\alpha$ , II, X	HM53,Wi89,Fr06,He07
Mayrit 785038	Kiso A–0904 80, SWW 211	H $\alpha$ , X	Wi89,Fr06
Mayrit 578189	SWW 31, [HHM07] 646	II	He07
Mayrit 1147198	SWW 26, [HHM07] 467	II	He07
Mayrit 100048	[HHM07] 754	II, X?	Ca07b,He07
Mayrit 1027277	SWW 141	Li I	Ca06
Mayrit 1003181	SWW 2, [KJN2005] 1	Li I, low $g$	Ke05
Mayrit 897077	S Ori J053943.2–023243, SWW 75	II	He07
Mayrit 1329304	Haro 5–5	H $\alpha$ , II	HM53,He07
Mayrit 461051	SWW 129, [HHM07] 908	II	He07
Mayrit 1493050	[KJN2005] 6, [OJV2004] 24	Li I, low $g$ , ev. disc	Ke05,He07
Mayrit 344206	S Ori J053834.5–024109, [HHM07] 598	II	He07
Mayrit 94106	[KJN2005] 8	Li I, low $g$	Ke05
Mayrit 1426063	S Ori J054009.3–022507, [KJN2005] 10	Li I, low $g$ , II	Ke05,He07
Mayrit 756124	SWW 45	Li I, II	Ca06,He07
Mayrit 1472090	SO430130	Li I, H $\alpha$	Ca06
Mayrit 498234	S Ori J053817.8–024050, SWW 5	II, X	Fr06,He07
Mayrit 53144	B05 3.01–67	low $g$	Bu05
Mayrit 468096	NX 151, [HHM07] 967	II, X	Fr06,He07
Mayrit 1316164	SWW 70	Li I	Ca06
Mayrit 1648346	[OJV2004] 26, SWW 8, [KJN2005] 3	Li I, low $g$	Ke05
Mayrit 633059	S Ori 3, [KJN2005] 20	Li I, low $g$ , X	Ke05,Fr06
Mayrit 767245	[OJV2004] 28, SWW 53, [KJN2005] 18	Li I, low $g$	Ke05
Mayrit 459224	S Ori J053823.6–024132, SWW 3	low $g$ , X	Bu05,Fr06
Mayrit 1542209	[KJN2005] 23, [OJV2004] 27	Li I, low $g$	Ke05
Mayrit 631045	S Ori J053914.5–022834	XX	Fr06
Mayrit 1081097	S Ori J053956.4–023804, B05 8.02–143	low $g$ , II	Bu05,He07
Mayrit 270181	S Ori J053844.4–024030, [KJN2005] 5	Li I, low $g$	Ke05
Mayrit 89175	[HHM07] 707	II	He07
Mayrit 355060	SWW 175, [KJN2005] 4	Li I, low $g$ , X	Ke05,Fr06
Mayrit 1482212	SWW 74, [KJN2005] 14	Li I, low $g$	Ke05
Mayrit 856047	SE 94, SWW 209, NX 167	Li I, X	Ca06,Fr06

**Table A.1.** Confirmed young stars and brown dwarfs in  $\sigma$  Orionis (cont.).

Name	Alternative name(s)	Feature(s) of youth	References
Mayrit 1216053	S Ori J053949.3–022346, SWW 44	Li I, H $\alpha$ , II	ZO02a, He07
Mayrit 966341	SWW 51, [KJN2005] 13	Li I, H $\alpha$ , low g, II	Ke05, He07
Mayrit 326008	S Ori 6, [KJN2005] 17	Li I, low g, X	Ke05, Fr06
Mayrit 1158064	S Ori J053954.2–022733, [SE2004] 116	II	He07
Mayrit 589213	S Ori J053823.3–024414, SWW 139	Li I, low g, X	Ke05, Fr06
Mayrit 764055	S Ori 2, SWW 164	II	He07
Mayrit 809248	SWW 174, B05 4.03–237	low g, II	Bu05, He07
Mayrit 249099	[KJN2005] 9, NX 124	Li I, low g, X	Ke05, Fr06
Mayrit 1773275	SWW 13, [KJN2005] 16	Li I, low g	Ke05
Mayrit 447254	S Ori J053816.0–023805, SWW 12	Li I, low g	Ke05
Mayrit 1391255	S Ori J053715.1–024202, SWW 160	Li I, H $\alpha$	ZO02a
Mayrit 703333	SWW 198, [HHM07] 485	II	He07
Mayrit 880185	SWW 37, [KJN2005] 22	Li I, low g	Ke05
Mayrit 992084	S Ori J053950.6–023414, [KJN2005] 19	Li I, low g	Ke05
Mayrit 214321	[HHM07] 614, HD 294271 #1	II	He07
Mayrit 329261	SWW 207, B05 3.01–51	low g, II	Bu05, He07
Mayrit 449020	SE 77, SWW 10, [KJN2005] 21	Li I, low g, X	Ke05, Fr06
Mayrit 994017	[HHM07] 866	II	He07
Mayrit 412168	S Ori J053850.6–024244, [KJN2005] 31	Li I, low g, II	Ke05, He07
Mayrit 1605033	SWW 84, [KJN2005] 24	Li I, low g	Ke05
Mayrit 1245076	S Ori J054005.1–023052	Li I, H $\alpha$ , II	ZO02a, He07
Mayrit 458140	[HHM07] 871, NX 130	II, X	Fr06, He07
Mayrit 50279	[HHM07] 673	II, X?	Ca07b, He07
Mayrit 483174	S Ori J053848.1–024401, [KJN2005] 35	Li I, low g, II	Ke05, He07, Ca07
Mayrit 316238	S Ori J053826.8–023846, B05 4.03–368	low g, II	Bu05, He07
Mayrit 1482130	S Ori J054000.2–025159, [KJN2005] 46	Li I, low g	Ke05
Mayrit 558039	S Ori 8, [SE2004] 83	II	He07
Mayrit 1122053	S Ori 10, [KJN2005] 40	low g, II	Ke05, He07
Mayrit 728257	S Ori 12, [KJN2005] 39	Li I, H $\alpha$ , low g, II	Bé99, Mu03, Ke05, He07
Mayrit 1340342	[KJN2005] 32	Li I, low g	Ke05
Mayrit 571197	S Ori J053833.9–024508, [KJN2005] 36	Li I, low g, mIR	Ke05, He07, Ca07
Mayrit 36263	[HHM07] 683	II	He07
Mayrit 726005	S Ori J053849.2–022358, [SE2004] 33	Li I, H $\alpha$ , Em, low g, II	SE04, Ke05, He07
Mayrit 942123	S Ori 14, [KJN2005] 49	Li I, low g	Ke05
Mayrit 1244205	[KJN2005] 43	Li I, low g	Ke05
Mayrit 264077	S Ori J053902.1–023501	mIR	He07, Ca07
Mayrit 425070	S Ori J053911.4–023333, [KJN2005] 42	Li I, low g	ByN03, Ke05
Mayrit 430007	S Ori 15, [KJN2005] 41	Li I, H $\alpha$ , low g, II	ByN03, Ke05, He07
Mayrit 1316178	S Ori J053847.2–025756, [KJN2005] 56	Li I, low g, mIR	Ke05, Ca07
Mayrit 1129222	[WB2004] 10, SWW 221	H $\alpha$	WB04
Mayrit 368195	S Ori J053838.6–024157, [KJN2005] 44	Li I, H $\alpha$ , low g	Ke05, Bu05
Mayrit 1045207	[KJN2005] 48	Li I, low g	Ke05
Mayrit 1364078	S Ori J054014.0–023127, [KJN2005] 63	Li I, H $\alpha$ , low g	Ke05
Mayrit 653348	S Ori 22, [KJN2005] 51	Li I, low g	Ke05
Mayrit 433123	S Ori 25	Li I, H $\alpha$ , Em, low g, X	Bé99, ByN03, Mu03, Fr06
Mayrit 399314	S Ori 18, [KJN2005] 47	Li I, low g	Ke05
Mayrit 1642101	[KJN2005] 54	Li I, low g	Ke05
Mayrit 1045094	S Ori J053954.3–023719, [HHM07] 1268	trans. disc	He07
Mayrit 761103	S Ori 21, [KJN2005] 61	Li I, low g	Ke05
Mayrit 334118	S Ori 17	Li I, H $\alpha$ , low g	Bé99, Mu03
Mayrit 258337	[HHM07] 633	II	He07
Mayrit 277181	S Ori J053844.4–024037, [HHM07] 700	ev. disc	He07, Ca07
Mayrit 1493341	[SE2004] 2	H $\alpha$ , Em	SE04
Mayrit 803197	S Ori J053829.0–024847, [HHM07] 537	II	He07, Ca07



**Table A.1.** Confirmed young stars and brown dwarfs in  $\sigma$  Orionis (cont.).

Name	Alternative name(s)	Feature(s) of youth	References
Mayrit 488237	S Ori 27, [KJN2005] 60	Li I, H $\alpha$ , low $g$	Bé99,ZO02a,Ke05
Mayrit 685341	S Ori 29, [KJN2005] 55	Li I, H $\alpha$ , low $g$	Bé99,Mu03,Ke05
Mayrit 495216	S Ori J053825.4–024241	H $\alpha$ , Em, mIR	Ca06a,He07,Ca07
Mayrit 232341	[KJN2005] 65	Li I, low $g$ , II	Ke05,He07
Mayrit 395225	S Ori J053826.1–024041, [KJN2005] 58	Li I, low $g$	ByN03,Ke05
Mayrit 799173	[KJN2005] 50	Li I, low $g$	Ke05
Mayrit 1717222	[KJN2005] 57	Li I, low $g$	Ke05
Mayrit 790270	[KJN2005] 62	Li I, low $g$	Ke05
Mayrit 757283	S Ori 35, [HHM07] 254	II	He07
Mayrit 438105	S Ori 30	H $\alpha$ , II	ByN03,He07,Ca07
Mayrit 633105	HH 446	Li I, H $\alpha$ , jet	Re98, An04
Mayrit 487350	[SE2004] 70, B05 3.01–480	Li I, low $g$ , X-flare	Bu05,Fr06,Ca06b
Mayrit 588270	S Ori J053805.5–023557, [HHM07] 327	II	He07
Mayrit 1196092	S Ori J054004.5–023642, [KJN2005] 73	H $\alpha$ , low $g$ , II	Ke05,He07,Ca07
Mayrit 872139	S Ori 28, [KJN2005] 64	Li I, low $g$	Ke05
Mayrit 1120128	S Ori 32, [KJN2005] 67	Li I, low $g$	Ke05
Mayrit 379292	S Ori J053821.3–023336, [KJN2005] 66	Li I, low $g$	Ke05
Mayrit 407333	S Ori 39, [KJN2005] 68	Li I, low $g$	Bé99,Ke05
Mayrit 1436317	[KJN2005] 72 AB	low $g$	Ke05
Mayrit 396273	S Ori J053818.2–023539, [KJN2005] 76	low $g$ , X	Ke05,Fr06
Mayrit 1095334	[KJN2005] 70, [HHM07] 392	Li I, low $g$ , II	Ke05,He07
Mayrit 926354	[KJN2005] 69	Li I, low $g$	Ke05
Mayrit 965028	S Ori 38	H $\alpha$ , II	ByN03,He07
Mayrit 358154	S Ori J053855.4–024121, [HHM07] 802	II	He07,Ca07
Mayrit 1504095	B05 2.03–617	low $g$	Bu05
Mayrit 111208	[HHM07] 668	Class I, X, extended?	He07,Ca07b

**Table A.2.** Fore- and background stars.

2MASS designation	Alternative name(s)	Sp.	$\mu_\alpha \cos \delta, \mu_\delta$ (mas a <sup>-1</sup> )	Remarks	References
J05382849-0303338	HD 294280	Yes	$\lesssim 10$	foreground K5	Ne95,Ca07a
J05375734-0253177	HD 294277	Yes	$\lesssim 10$	foreground K2	Ne95,Ca07a
J05383876-0249013	HD 294278	Yes	+10.9,+2.6	foreground K2, no $\mu$	Ne95,Ca07a
J05372988-0243458	TYC 4771 1468 1	No	$\lesssim 10$	foreground K-M:	Ca07a
J05365714-0225400	TYC 4770 1018 1	No	$\lesssim 10$	foreground K-M:	Ca07a
J05391394-0210493	TYC 4771 1012 1	No	$\lesssim 10$	foreground K-M:	Ca07a
J05394306-0228456	TYC 4771 934 1	No	$\lesssim 10$	foreground K-M:	Ca07a
J05400217-0253423	...	No	$\lesssim 10$	foreground M:	...
J05375782-0226336	HD 294269	Yes	+43.5,-16.1	G0, no Li I, no $\mu$ , no $V_r$	WH78,CSL95,Ca07a
J05372067-0249330	HD 294276	Yes	+8.8,-61.7	foreground G0, no $\mu$	Ne95,Ca07a
J05395112-0232257	SO110270	Yes	$\lesssim 10$	late MIII, no Li I, no $V_r$	Ca06
J05374536-0244125	HD 294274	Yes	-8.1,-19.4	G0, no $\mu$	Ne95,Ca07a
J05401246-0252576	HD 294307	Yes	+0.1,-16.8	F8, no $\mu$	WH78,Ne95,Ca07a
J05385588-0301263	SO421031	Yes	$\lesssim 10$	late K, no Li I, no $V_r$	Ca06
J05390143-0253431	...	No	$\lesssim 10$	foreground K:	...
J05371882-0231364	HD 294270	Yes	+16.8,-23.4	G0, no $\mu$	WH78,Ne95,Ca07a
J05374179-0229082	GSC 04771-00621	No	+7.0,-11.1	no $\mu$	Ca07a
J05391564-0229568	...	No	+0.8,-41.5	no $\mu$	...
J05392349-0216499	SO141016	Yes	$\lesssim 10$	late K, no Li I, no $V_r$	Ca06
J05375905-0241005	TYC 4771 720 1	No	-20.1,-16.6	no $\mu$	Ca07a
J05395061-0253007	SO440728	Yes	$\lesssim 10$	late K, no Li I, no $V_r$	Ca06
J05394761-0258593	...	No	+43.6,-19.5	no $\mu$	...
J05373106-0231436	G 99-20, LP 598-162	No	+49.7,-283.4	M:, no $\mu$	GBT61
J05375425-0214002	SO240546	Yes	$\lesssim 10$	late K, no Li I, no $V_r$	Ca06
J05391903-0221381	SO141110	Yes	-16.6,-1.0	early K, no Li I, no $V_r$	Ca06
J05373785-0250095	SO340502	Yes	$\lesssim 10$	late K, no Li I, no $V_r$	Ca06
J05371035-0219331	SO241273	Yes	-15.2,-0.4	late K, no Li I, no $V_r$	Ca06
J05392045-0227514	TYC 4771 661 1	No	+16.6,-20.1	no $\mu$	Ca07a
J05375970-0251033	SO340096	Yes	$\lesssim 10$	no Li I	Ca06
J05371924-0228462	TYC 4770 924 1	No	+1.8,-43.4	no $\mu$	Ca07a
J05371081-0235179	...	No	-23.0,-15.5	no $\mu$	...
J05372498-0252023	SO340709	Yes	$\lesssim 10$	no Li I	Ca06
J05370986-0240008	TYC 4770 1432 1	No	-30.9,-0.1	no $\mu$	Ca07a
J05402033-0254083	SO440218	Yes	$\lesssim 10$	no Li I	Ca06
J05391133-0215057	...	No	+25.7,-10.6	no $\mu$	...
J05371407-0221090	SO241215	Yes	$\lesssim 10$	no Li I	Ca06
J05375047-0300434	SO310322	Yes	$\lesssim 10$	no Li I	Ca06
J05383962-0226497	SO120908	Yes	+46.0,-18.0	no Li I, no $\mu$	Ca06
J05390829-0249463	SO441377	Yes	$\lesssim 10$	no Li I	Ca06
J05392402-0257486	SO411068	Yes	$\lesssim 10$	no Li I	Ca06
J05373094-0236218	SO330584	Yes	-1.7,-28.8	no Li I, no $\mu$	Ca06
J05380068-0303404	SO310099	Yes	$\lesssim 10$	no Li I	Ca06
J05393136-0252522	SO441034	Yes	$\lesssim 10$	no Li I	Ca06
J05393464-0212355	SO140804	Yes	$\lesssim 10$	no Li I	Ca06
J05403213-0248348	...	No	-5.6,-18.7	no $\mu$	...
J05402361-0243077	SO430116	Yes	+62.0,-96.0	no Li I, no $\mu$	Ca06
J05372693-0221541	SO241003	Yes	-18.0,+44.0	no Li I, no $\mu$	Ca06
J05382640-0234286	SO210038	Yes	-25.1,+11.8	no Li I, no $\mu$	Ca06
J05392676-0233378	...	No	+34.0,-14.0	no $\mu$	...
J05382324-0212485	SO240078	Yes	$\lesssim 10$	no Li I	Ca06
J05365467-0232070	SO221028	Yes	-13.4,+15.8	no Li I, no $\mu$	Ca06
J05383771-0303131	SO421148	Yes	$\lesssim 10$	no Li I	Ca06

**Table A.2.** Fore- and background stars (cont.).

2MASS designation	Alternative name(s)	Sp.	$\mu_\alpha \cos \delta, \mu_\delta$ (mas a <sup>-1</sup> )	Remarks	References
J05403667-0243469	...	No	+53.5,+2.2	no $\mu$	...
J05393832-0233054	SO110437	Yes	$\lesssim 10$	no Li I	Ca06
J05385699-0231257	SO110979	Yes	+18.0,-8.0	no Li I, no $\mu$	Ca06
J05391998-0208293	SO130817	Yes	...	no Li I	Ca06
J05382993-0223382	[W96] rJ053829-0223	Yes	...	no Li I, X	Ca06,Fr06
J05374982-0246032	SO340266	Yes	...	no Li I	Ca06
J05400075-0239524	SO430425	Yes	...	no Li I	Ca06
J05373316-0253360	SO340567	Yes	...	no Li I, no $V_r$ , [N II]?	Ca06
J05392421-0255286	SO441143	Yes	...	no Li I	Ca06
J05382701-0304541	SO421275	Yes	...	no Li I	Ca06
J05390009-0218382	SO141474	Yes	...	no Li I	Ca06
J05394477-0301111	SO410744	Yes	...	no Li I	Ca06
J05390386-0207086	SO131061	Yes	...	no Li I	Ca06
J05381213-0209202	SO230292	Yes	...	no Li I	Ca06
J05381907-0232015	SO121216	Yes	...	no Li I	Ca06
J05394030-0243402	SO430718	Yes	...	no Li I	Ca06
J05394501-0253489	SO440823	Yes	...	no Li I	Ca06
J05392971-0227227	SO110557	Yes	...	no Li I	Ca06
J05392492-0300331	SO411053	Yes	...	no Li I	Ca06
J05375779-0255002	SO340124	Yes	...	no Li I	Ca06
J05385978-0253575	SO420586	Yes	...	no Li I	Ca06
J05381033-0213596	[KJN2005] 7	Yes	...	no Li I, no $V_r$ , no low $g$	Ke05
J05393056-0238270	SWW 222, NX 169	Yes	...	no $V_r$ , no low $g$ , X	SWW04,Bu05,Fr06
J05391348-0223519	[KJN2005] 12	Yes	...	no Li I, no $V_r$ , no low $g$	Ke05
J05391505-0218445	[KJN2005] 26	Yes	...	no Li I, no $V_r$ , no low $g$	Ke05
J05374965-0249029	[KJN2005] 28	Yes	...	no Li I, no $V_r$ , no low $g$	Ke05
J05382283-0245304	B05 4.03-29	Yes	...	no $V_r$	Bu05
J05390582-0226155	[KJN2005] 30	Yes	...	no Li I, no $V_r$ , no low $g$	Ke05
J05385818-0221118	B05 1.02-237	Yes	...	no $V_r$	Bu05
J05372864-0246469	[KJN2005] 38	Yes	...	no Li I, no $V_r$ , no low $g$	Ke05
J05402339-0228275	B05 1.01-343	Yes	...	no $V_r$ , no low $g$	Bu05
J05390808-0231323	B05 1.02-87	Yes	...	no $V_r$	Bu05
J05393673-0231589	B05 1.01-237	Yes	...	no $V_r$ , no low $g$	Bu05

**Table A.3.** Galaxies in the survey area.

2MASS designation	Alternative name(s)	$I \pm \delta I$ (mag)	$J \pm \delta J$ (mag)	$K_s \pm \delta K_s$ (mag)	Remarks	References
J05380008–0223516	...	$14.711 \pm 1.00$	$13.441 \pm 0.077$	$12.301 \pm 0.072$	...	2MX03
J05370717–0241453	...	$15.729 \pm 1.00$	$14.465 \pm 0.087$	$13.172 \pm 0.078$	...	2MX03
J05380720–0303036	...	$16.102 \pm 1.00$	$14.559 \pm 0.076$	$13.319 \pm 0.073$	...	2MX03
J05372792–0240033	2E 1448	$16.186 \pm 1.00$	$14.825 \pm 0.078$	$13.432 \pm 0.074$	XX	2MX03,He07,CL-S
J05373789–0240544	...	$15.982 \pm 1.00$	$14.840 \pm 0.071$	$13.560 \pm 0.070$	...	2MX03
J05382931–0233125	...	$16.275 \pm 0.07$	$14.853 \pm 0.087$	$13.713 \pm 0.089$	...	2MX03
J05400480–0245247	[HHM2007] 1684	$16.545 \pm 0.07$	$14.906 \pm 0.078$	$13.464 \pm 0.069$	...	2MX03,He07
J05365673–0223463	...	$16.292 \pm 1.00$	$14.949 \pm 0.064$	$13.915 \pm 0.075$	...	2MX03
J05371491–0233453	...	$16.697 \pm 1.00$	$15.116 \pm 0.072$	$13.910 \pm 0.072$	...	2MX03
J05380615–0217346	[HHM2007] 436	$16.587 \pm 1.00$	$15.250 \pm 0.073$	$13.801 \pm 0.077$	...	2MX03,He07
J05375630–0245130	2E 1456	$16.734 \pm 1.00$	$15.398 \pm 0.073$	$13.720 \pm 0.067$	XXX	CL-S
J05385576–0229499	...	$16.955 \pm 0.11$	$15.417 \pm 0.073$	$14.120 \pm 0.080$	...	2MX03
J05375091–0255334	...	$16.817 \pm 1.00$	$15.422 \pm 0.090$	$13.990 \pm 0.082$	...	2MX03
J05390763–0231149	[HHM2007] 1135	$17.145 \pm 0.24$	$15.608 \pm 0.072$	$14.143 \pm 0.076$	...	2MX03,He07
J05400146–0252187	[HHM2007] 1662	$17.446 \pm 0.12$	$15.634 \pm 0.085$	$14.240 \pm 0.081$	...	2MX03,He07
J05385503–0228189	[HHM2007] 1011	$17.073 \pm 0.12$	$15.645 \pm 0.086$	$14.240 \pm 0.075$	...	2MX03,He07
J05373135–0250574	[HHM2007] 103	$17.045 \pm 1.00$	$15.648 \pm 0.083$	$14.135 \pm 0.084$	...	2MX03,He07
J05365319–0246340	...	$17.842 \pm 1.00$	$16.331 \pm 0.104$	$14.898 \pm 0.082$	...	2MX03

**Table A.4.** Probable reddened sources in the northeastern nebosity.

2MASS designation	Alternative name(s)	$I \pm \delta I$ (mag)	$J \pm \delta J$ (mag)	$K_s \pm \delta K_s$ (mag)	Remarks	References
J05392159–0212171	...	$14.191 \pm 0.16$	$12.092 \pm 0.026$	$11.360 \pm 0.019$	blue $J - K_s$	...
J05393293–0211312	SWW 93	$15.636 \pm 0.24$	$13.011 \pm 0.024$	$12.055 \pm 0.021$	Haro 5–24?	Sh04
J05390830–0207002	...	$15.389 \pm 0.24$	$13.234 \pm 0.026$	$12.543 \pm 0.026$	blue $J - K_s$	...
J05390597–0207313	...	$16.536 \pm 0.24$	$13.656 \pm 0.028$	$12.572 \pm 0.023$	...	...
J05385224–0208098	SWW 110	$15.644 \pm 0.05$	$13.692 \pm 0.026$	$12.818 \pm 0.026$	...	Sh04
J05391653–0207331	SWW 96	$16.035 \pm 0.24$	$13.826 \pm 0.027$	$12.967 \pm 0.034$	...	Sh04
J05392373–0210570	...	$16.824 \pm 0.24$	$14.410 \pm 0.029$	$13.665 \pm 0.044$	blue $J - K_s$	...
J05391166–0206569	...	$17.724 \pm 0.25$	$14.915 \pm 0.030$	$14.003 \pm 0.050$	...	...
J05393132–0212186	...	$17.284 \pm 0.24$	$14.937 \pm 0.033$	$14.042 \pm 0.055$	Haro 5–24?	...
J05393504–0212256	...	$17.403 \pm 0.24$	$14.988 \pm 0.032$	$14.017 \pm 0.060$	...	...
J05392208–0209346	...	$17.358 \pm 0.24$	$15.021 \pm 0.034$	$14.116 \pm 0.061$	...	...
J05391594–0208579	...	$17.747 \pm 0.25$	$15.193 \pm 0.039$	$14.299 \pm 0.075$	...	...

**Table A.5.** Candidate young stars and brown dwarfs in  $\sigma$  Orionis.

Name	Alternative name(s)	Remarks	References
Mayrit 1165138	...	New, G:-type	...
Mayrit 240322	BD-02 1324D	...	...
Mayrit 882239	...	New, G:-type	...
Mayrit 1338116	...	New	...
Mayrit 123000	P053844-0233	...	Wo96,Ca07b
Mayrit 1045356	...	New	...
Mayrit 1564345	...	New	...
Mayrit 1169117	...	New	...
Mayrit 968292	GSC 04771-00962	X?	Ca07a
Mayrit 1468100	HD 294301	F2V(n)	WH78,GC93,Ca07a
Mayrit 1037054	HD 294299	H $\alpha$ ?, Em?	Ca06
Mayrit 1311070	...	New	...
Mayrit 258215	[HHM2007] 600	Giant?	He07
Mayrit 733222	...	New	...
Mayrit 1650224	...	New	...
Mayrit 1275190	...	New	...
Mayrit 1107114	...	New	...
Mayrit 1456284	TYC 4770 1261 1	...	Ca07a
Mayrit 945030	...	New	...
Mayrit 735131	[HHM07] 1009	ev. disc	He07
Mayrit 1110113	...	New	...
Mayrit 1343194	...	New	...
Mayrit 861056	...	New	...
Mayrit 1596206	...	New	...
Mayrit 936072	...	New	...
Mayrit 332168	SWW 205, NX 94	X	SWW04,Fr06
Mayrit 1082115	...	New	...
Mayrit 1273081	...	New, X?	Wh00
Mayrit 1476077	...	New, X?	Wh00
Mayrit 1449349	SWW 216	...	SWW04
Mayrit 30241	...	X, $K_s$ excess	Ca07b
Mayrit 1500066	...	New	...
Mayrit 1411131	SWW 118 AB	...	SWW04
Mayrit 67128	NX 91	X	Fr06,Ca07b
Mayrit 1304203	SWW 150	...	SWW04
Mayrit 1298302	SWW 137	Li r?, H $\alpha$ ?	SWW04,Ca06
Mayrit 947192	SWW 178	...	SWW04
Mayrit 1178032	SWW 76	X?	SWW04,Wh00
Mayrit 1411049	...	New, X?	Wh00
Mayrit 986106	SWW 32	...	SWW04
Mayrit 660067	...	New	...
Mayrit 1610344	SWW 228	...	SWW04
Mayrit 1250010	SWW 46	...	SWW04
Mayrit 508194	S Ori J053836.7-024414	...	Bé04,SWW04
Mayrit 1273031	SWW 94	X?	SWW04,Wh00
Mayrit 544049	SWW 203, NX 147	X	SWW04,Fr06
Mayrit 861230	SWW 140, NX 4	X	SWW04,Fr06
Mayrit 870187	SWW 11	Li r?, H $\alpha$ ?	SWW04,Ca06
Mayrit 1603044	...	New	...
Mayrit 105092	NX 103	X	Fr06
Mayrit 1691180	SWW 64	...	SWW04
Mayrit 552137	...	New	...
Mayrit 1087058	S Ori J053946.6-022631	...	Bé04,SWW04



**Table A.5.** Candidate young stars and brown dwarfs in  $\sigma$  Orionis (cont.).

Name	Alternative name(s)	Remarks	References
Mayrit 1765240	SWW 43	...	SWW04
Mayrit 887313	SWW 27	...	SWW04
Mayrit 126250	SWW 154	...	SWW04
Mayrit 124140	[W96] P053850–0237	X	Wo96,Fr06,Ca07b
Mayrit 1797077	...	New	...
Mayrit 623079	SWW 7	...	SWW04
Mayrit 1090331	SWW 104	...	SWW04
Mayrit 1396348	SWW 73	...	SWW04
Mayrit 1630286	SWW 90	...	SWW04
Mayrit 1114078	S Ori J053957.5–023212	...	Bé04
Mayrit 1176297	[HHM] 107	...	He07
Mayrit 441103	NX 148	X	Fr06
Mayrit 1249081	S Ori J054007.1–023245	...	Bé04
Mayrit 839077	S Ori 4	...	Bé99
Mayrit 1416280	SWW 22	...	SWW04
Mayrit 1524081	...	New, X?	Wh00
Mayrit 563178	S Ori J053845.9–024523	X	Bé04,Fr06
Mayrit 643039	S Ori 1, SWW 128	...	Bé99
Mayrit 551105	S Ori 5, SWW 60	...	Bé99
Mayrit 913333	S Ori 9	$P = 250 \pm 100$ h	Bé99,SE04
Mayrit 1788137	SWW 58	...	SWW04
Mayrit 1462013	...	New	...
Mayrit 1583183	...	New	...
Mayrit 1714107	...	New	...
Mayrit 410059	S Ori 7	...	Bé99
Mayrit 219320	HD 294271 #2	...	Ca05
Mayrit 1788199	...	New	...
Mayrit 1468346	...	New	...
Mayrit 855326	S Ori 13	...	Bé99
Mayrit 578123	NX 153	X	Fr06
Mayrit 910079	S Ori 11	...	Bé99
Mayrit 1357018	...	New	...
Mayrit 538122	S Ori 16	...	Bé99
Mayrit 994201	...	New	...
Mayrit 999306	S Ori 23	...	Bé99
Mayrit 537040	S Ori 20	M5.5, low $g$ ?, SB?	Bé99,ByN03,Ke05
Mayrit 1580310	...	New	...
Mayrit 1701117	...	New	...
Mayrit 1599271	S Ori 33	M6.5, $P = 8.6 \pm 0.7$ h	Bé99,B-JM01
Mayrit 710210	S Ori 31	M7.0, $P = 7.5 \pm 0.6$ h	Bé99,ByN03,B-JM01
Mayrit 1738301	...	New	...
Mayrit 1082188	...	New	...
Mayrit 1720188	...	New	...
Mayrit 926051	...	New, extended?	...

**Table A.6.** The Mayrit catalogue: J2000 coordinates and  $IJHK_s$ -band magnitudes of  $\sigma$  Orionis members and candidate members.

Name	$\alpha$ (J2000)	$\delta$ (J2000)	$I \pm \delta I$ (mag)	$J \pm \delta J$ (mag)	$H \pm \delta H$ (mag)	$K_s \pm \delta K_s$ (mag)	Young
Mayrit AB	05 38 44.76	-02 36 00.2	$4.02 \pm 0.01$	$4.330 \pm 0.010$	$4.500 \pm 0.010$	$4.490 \pm 0.016$	★
Mayrit 42062	05 38 47.21	-02 35 40.5	$6.86 \pm 0.10$	$6.974 \pm 0.026$	$6.954 \pm 0.031$	$6.952 \pm 0.029$	★
Mayrit 13084	05 38 45.62	-02 35 58.9	$6.98 \pm 0.03$	$7.116 \pm 0.029$	$7.219 \pm 0.027$	$7.260 \pm 0.021$	★
Mayrit 1548068	05 40 20.19	-02 26 08.2	$7.77 \pm 0.10$	$7.841 \pm 0.029$	$7.904 \pm 0.042$	$7.880 \pm 0.031$	★
Mayrit 524060	05 39 15.06	-02 31 37.6	$8.18 \pm 0.10$	$7.976 \pm 0.021$	$7.881 \pm 0.038$	$7.828 \pm 0.029$	★
Mayrit 208324	05 38 36.55	-02 33 12.8	$7.99 \pm 0.10$	$8.100 \pm 0.021$	$8.180 \pm 0.055$	$8.202 \pm 0.038$	★
Mayrit 306125	05 39 01.49	-02 38 56.4	$8.21 \pm 0.10$	$8.131 \pm 0.030$	$8.105 \pm 0.042$	$8.093 \pm 0.020$	★
Mayrit 182305	05 38 34.80	-02 34 15.8	$8.40 \pm 0.10$	$8.346 \pm 0.026$	$8.380 \pm 0.046$	$8.374 \pm 0.026$	★
Mayrit 1116300	05 37 40.48	-02 26 36.8	$8.42 \pm 0.10$	$8.413 \pm 0.023$	$8.481 \pm 0.065$	$8.407 \pm 0.040$	★
Mayrit 863116	05 39 36.54	-02 42 17.2	$9.23 \pm 0.10$	$8.462 \pm 0.027$	$8.055 \pm 0.040$	$7.944 \pm 0.038$	★
Mayrit 189303	05 38 34.24	-02 34 16.1	$8.57 \pm 0.10$	$8.779 \pm 0.021$	$8.819 \pm 0.065$	$8.790 \pm 0.025$	★
Mayrit 960106	05 39 46.20	-02 40 32.1	$8.94 \pm 0.10$	$8.876 \pm 0.024$	$8.894 \pm 0.063$	$8.800 \pm 0.019$	★
Mayrit 1659068	05 40 27.55	-02 25 43.1	$9.42 \pm 0.10$	$9.062 \pm 0.032$	$8.872 \pm 0.084$	$8.775 \pm 0.024$	★
Mayrit 11238	05 38 44.12	-02 36 06.3	$9.14 \pm 0.10$	$9.086 \pm 0.032$	$9.109 \pm 0.047$	$9.129 \pm 0.021$	★
Mayrit 1359077	05 40 13.09	-02 30 53.2	$9.18 \pm 0.10$	$9.207 \pm 0.035$	$9.203 \pm 0.024$	$9.155 \pm 0.022$	★
Mayrit 783254	05 37 54.40	-02 39 29.8	$10.274 \pm 1.00$	$9.255 \pm 0.020$	$8.720 \pm 0.051$	$8.613 \pm 0.025$	★
Mayrit 1227243	05 37 31.87	-02 45 18.5	$9.36 \pm 0.10$	$9.256 \pm 0.028$	$9.242 \pm 0.023$	$9.183 \pm 0.025$	★
Mayrit 1288163	05 39 09.21	-02 56 34.7	$9.32 \pm 0.10$	$9.261 \pm 0.023$	$9.303 \pm 0.024$	$9.298 \pm 0.023$	★
Mayrit 1366055	05 39 59.32	-02 22 54.4	$10.153 \pm 0.06$	$9.339 \pm 0.029$	$8.902 \pm 0.061$	$8.802 \pm 0.025$	★
Mayrit 1285339	05 38 14.12	-02 15 59.8	$10.01 \pm 0.10$	$9.393 \pm 0.023$	$9.061 \pm 0.024$	$8.873 \pm 0.023$	★
Mayrit 377264	05 38 19.75	-02 36 39.1	$12.212 \pm 0.03$	$9.410 \pm 0.028$	$8.318 \pm 0.055$	$7.616 \pm 0.018$	★
Mayrit 1165138	05 39 36.86	-02 50 24.8	$11.093 \pm 0.06$	$9.680 \pm 0.027$	$8.986 \pm 0.024$	$8.808 \pm 0.023$	
Mayrit 1160190	05 38 31.38	-02 55 03.2	$10.229 \pm 0.04$	$9.873 \pm 0.028$	$9.727 \pm 0.023$	$9.683 \pm 0.026$	★
Mayrit 240322	05 38 34.85	-02 32 52.2	$10.743 \pm 0.04$	$9.890 \pm 0.028$	$9.302 \pm 0.024$	$9.211 \pm 0.027$	
Mayrit 882239	05 37 54.45	-02 43 37.8	$11.114 \pm 1.00$	$9.896 \pm 0.028$	$9.228 \pm 0.024$	$9.051 \pm 0.022$	
Mayrit 114305	05 38 38.49	-02 34 55.0	$10.815 \pm 0.04$	$9.907 \pm 0.027$	$9.280 \pm 0.024$	$9.119 \pm 0.025$	★
Mayrit 789281	05 37 53.04	-02 33 34.4	$10.798 \pm 1.00$	$9.991 \pm 0.027$	$9.605 \pm 0.024$	$9.474 \pm 0.025$	★
Mayrit 1338116	05 40 05.30	-02 45 38.0	$11.471 \pm 0.05$	$10.008 \pm 0.026$	$9.366 \pm 0.023$	$9.189 \pm 0.025$	
Mayrit 123000	05 38 44.80	-02 33 57.0	$11.102 \pm 0.04$	$10.014 \pm 0.026$	$9.435 \pm 0.023$	$9.262 \pm 0.022$	
Mayrit 1106058	05 39 47.42	-02 26 16.3	$10.962 \pm 0.06$	$10.035 \pm 0.027$	$9.526 \pm 0.029$	$9.382 \pm 0.027$	★
Mayrit 1045356	05 38 39.72	-02 18 37.7	$11.406 \pm 0.03$	$10.073 \pm 0.023$	$9.304 \pm 0.023$	$9.101 \pm 0.021$	
Mayrit 717307	05 38 06.50	-02 28 49.4	$10.741 \pm 1.00$	$10.088 \pm 0.027$	$9.829 \pm 0.024$	$9.750 \pm 0.022$	★
Mayrit 1564345	05 38 17.29	-02 10 51.9	$11.170 \pm 0.04$	$10.126 \pm 0.023$	$9.458 \pm 0.024$	$9.287 \pm 0.024$	
Mayrit 521199	05 38 33.68	-02 44 14.2	$11.509 \pm 0.03$	$10.131 \pm 0.026$	$9.280 \pm 0.024$	$8.666 \pm 0.024$	★
Mayrit 1169117	05 39 54.37	-02 44 47.7	$11.484 \pm 0.05$	$10.133 \pm 0.030$	$9.491 \pm 0.024$	$9.293 \pm 0.022$	
Mayrit 528005	05 38 48.04	-02 27 14.2	$11.359 \pm 0.03$	$10.156 \pm 0.023$	$9.463 \pm 0.026$	$9.187 \pm 0.019$	★
Mayrit 521210	05 38 27.53	-02 43 32.6	$10.396 \pm 0.04$	$10.176 \pm 0.028$	$10.099 \pm 0.026$	$10.103 \pm 0.027$	★
Mayrit 968292	05 37 44.92	-02 29 57.3	$10.747 \pm 1.00$	$10.202 \pm 0.026$	$9.960 \pm 0.023$	$9.905 \pm 0.022$	
Mayrit 1468100	05 40 21.12	-02 40 25.6	$10.568 \pm 0.04$	$10.210 \pm 0.028$	$10.059 \pm 0.024$	$9.992 \pm 0.024$	
Mayrit 1037054	05 39 40.57	-02 25 46.8	$10.978 \pm 0.06$	$10.312 \pm 0.023$	$10.141 \pm 0.023$	$10.033 \pm 0.019$	
Mayrit 1311070	05 40 06.97	-02 28 30.1	$10.955 \pm 0.06$	$10.390 \pm 0.027$	$10.17 \pm 0.024$	$10.096 \pm 0.024$	
Mayrit 1679078	05 40 34.50	-02 30 22.3	$11.644 \pm 0.04$	$10.414 \pm 0.026$	$9.698 \pm 0.023$	$9.500 \pm 0.021$	★
Mayrit 258215	05 38 34.79	-02 39 30.0	$11.938 \pm 0.03$	$10.436 \pm 0.028$	$9.524 \pm 0.024$	$9.273 \pm 0.025$	
Mayrit 489196	05 38 35.87	-02 43 51.2	$12.438 \pm 0.03$	$10.445 \pm 0.027$	$9.726 \pm 0.024$	$9.311 \pm 0.028$	★
Mayrit 733222	05 38 11.75	-02 45 01.2	$12.039 \pm 1.00$	$10.467 \pm 0.026$	$9.717 \pm 0.023$	$9.433 \pm 0.021$	
Mayrit 1650224	05 37 28.85	-02 55 55.6	$11.675 \pm 1.00$	$10.484 \pm 0.030$	$9.870 \pm 0.024$	$9.733 \pm 0.021$	
Mayrit 1275190	05 38 30.31	-02 56 56.5	$10.904 \pm 0.04$	$10.517 \pm 0.028$	$10.304 \pm 0.023$	$10.299 \pm 0.024$	
Mayrit 615296	05 38 07.85	-02 31 31.4	$11.634 \pm 1.00$	$10.566 \pm 0.027$	$9.930 \pm 0.023$	$9.769 \pm 0.025$	★
Mayrit 203039	05 38 53.30	-02 33 22.0	$11.472 \pm 0.03$	$10.607 \pm 0.026$	$9.919 \pm 0.023$	$9.734 \pm 0.024$	★
Mayrit 1564058	05 40 12.87	-02 22 02.0	$11.858 \pm 0.05$	$10.642 \pm 0.026$	$9.835 \pm 0.023$	$9.437 \pm 0.025$	★
Mayrit 931117	05 39 39.90	-02 43 09.0	$11.956 \pm 0.05$	$10.647 \pm 0.027$	$9.920 \pm 0.023$	$9.530 \pm 0.019$	★
Mayrit 459340	05 38 34.45	-02 28 47.6	$11.004 \pm 0.04$	$10.666 \pm 0.024$	$10.614 \pm 0.024$	$10.545 \pm 0.024$	★

**Table A.6.** The Mayrit catalogue: J2000 coordinates and  $IJHK_s$ -band magnitudes of  $\sigma$  Orionis members and candidate members (cont.).

Name	$\alpha$ (J2000)	$\delta$ (J2000)	$I \pm \delta I$ (mag)	$J \pm \delta J$ (mag)	$H \pm \delta H$ (mag)	$K_s \pm \delta K_s$ (mag)	Young
Mayrit 1107114	05 39 52.53	-02 43 22.3	12.241 $\pm$ 0.04	10.681 $\pm$ 0.028	9.879 $\pm$ 0.024	9.666 $\pm$ 0.024	
Mayrit 634052	05 39 18.00	-02 29 28.0	11.729 $\pm$ 0.17	10.721 $\pm$ 0.027	10.270 $\pm$ 0.026	10.117 $\pm$ 0.023	★
Mayrit 1456284	05 37 10.47	-02 30 07.2	11.307 $\pm$ 1.00	10.721 $\pm$ 0.048	10.458 $\pm$ 0.046	10.299 $\pm$ 0.042	
Mayrit 750107	05 39 32.57	-02 39 44.0	12.385 $\pm$ 0.17	10.820 $\pm$ 0.027	10.104 $\pm$ 0.024	9.917 $\pm$ 0.019	★
Mayrit 822170	05 38 54.11	-02 49 29.8	11.729 $\pm$ 0.03	10.829 $\pm$ 0.026	10.310 $\pm$ 0.024	10.126 $\pm$ 0.019	★
Mayrit 1415279	05 37 11.61	-02 32 08.8	11.646 $\pm$ 1.00	10.876 $\pm$ 0.024	10.286 $\pm$ 0.025	10.073 $\pm$ 0.021	★
Mayrit 207358	05 38 44.24	-02 32 33.6	12.014 $\pm$ 0.03	10.877 $\pm$ 0.027	10.161 $\pm$ 0.023	10.014 $\pm$ 0.025	★
Mayrit 958292	05 37 45.57	-02 29 58.5	11.762 $\pm$ 1.00	10.917 $\pm$ 0.026	10.619 $\pm$ 0.024	10.519 $\pm$ 0.021	★
Mayrit 945030	05 39 16.59	-02 22 24.2	12.384 $\pm$ 0.17	10.917 $\pm$ 0.026	10.087 $\pm$ 0.023	9.884 $\pm$ 0.023	
Mayrit 969077	05 39 47.80	-02 32 24.0	12.256 $\pm$ 0.04	10.969 $\pm$ 0.026	10.287 $\pm$ 0.024	10.082 $\pm$ 0.019	★
Mayrit 1626148	05 39 42.79	-02 58 53.9	12.419 $\pm$ 0.04	11.016 $\pm$ 0.028	10.196 $\pm$ 0.024	9.841 $\pm$ 0.026	★
Mayrit 1223121	05 39 54.60	-02 46 34.0	12.757 $\pm$ 0.03	11.054 $\pm$ 0.028	10.251 $\pm$ 0.024	9.832 $\pm$ 0.024	★
Mayrit 735131	05 39 21.74	-02 44 03.8	12.746 $\pm$ 0.16	11.097 $\pm$ 0.028	10.405 $\pm$ 0.024	10.218 $\pm$ 0.024	
Mayrit 1110113	05 39 53.13	-02 43 08.4	12.425 $\pm$ 0.04	11.130 $\pm$ 0.030	10.469 $\pm$ 0.023	10.273 $\pm$ 0.028	
Mayrit 1343194	05 38 22.65	-02 57 42.2	12.437 $\pm$ 0.03	11.147 $\pm$ 0.023	10.272 $\pm$ 0.023	10.090 $\pm$ 0.021	
Mayrit 105249	05 38 38.23	-02 36 38.4	12.340 $\pm$ 0.03	11.158 $\pm$ 0.026	10.465 $\pm$ 0.023	10.312 $\pm$ 0.022	★
Mayrit 1471085	05 40 22.56	-02 33 46.9	12.295 $\pm$ 0.03	11.158 $\pm$ 0.028	10.533 $\pm$ 0.023	10.362 $\pm$ 0.023	★
Mayrit 861056	05 39 32.35	-02 27 57.1	12.682 $\pm$ 0.16	11.175 $\pm$ 0.023	10.498 $\pm$ 0.023	10.326 $\pm$ 0.023	
Mayrit 1596206	05 37 57.90	-02 59 53.7	12.528 $\pm$ 1.00	11.205 $\pm$ 0.024	10.538 $\pm$ 0.023	10.354 $\pm$ 0.023	
Mayrit 936072	05 39 44.11	-02 31 09.2	12.502 $\pm$ 0.04	11.207 $\pm$ 0.026	10.510 $\pm$ 0.024	10.331 $\pm$ 0.019	
Mayrit 1396071	05 40 12.75	-02 28 19.9	12.744 $\pm$ 0.03	11.220 $\pm$ 0.026	10.512 $\pm$ 0.023	10.280 $\pm$ 0.027	★
Mayrit 591158	05 38 59.55	-02 45 08.1	11.686 $\pm$ 0.03	11.222 $\pm$ 0.027	10.984 $\pm$ 0.023	10.893 $\pm$ 0.027	★
Mayrit 344337	05 38 35.87	-02 30 43.3	12.483 $\pm$ 0.03	11.245 $\pm$ 0.026	10.598 $\pm$ 0.023	10.424 $\pm$ 0.024	★
Mayrit 397060	05 39 07.61	-02 32 39.1	12.921 $\pm$ 0.16	11.298 $\pm$ 0.026	10.573 $\pm$ 0.024	10.260 $\pm$ 0.023	★
Mayrit 285331	05 38 35.47	-02 31 51.7	12.501 $\pm$ 0.03	11.303 $\pm$ 0.026	10.627 $\pm$ 0.023	10.460 $\pm$ 0.024	★
Mayrit 622103	05 39 25.20	-02 38 22.0	13.028 $\pm$ 0.16	11.307 $\pm$ 0.031	10.451 $\pm$ 0.023	10.002 $\pm$ 0.023	★
Mayrit 707162	05 38 59.11	-02 47 13.3	12.561 $\pm$ 0.03	11.320 $\pm$ 0.030	10.694 $\pm$ 0.029	10.359 $\pm$ 0.025	★
Mayrit 260182	05 38 44.23	-02 40 19.7	12.513 $\pm$ 0.03	11.363 $\pm$ 0.026	10.688 $\pm$ 0.024	10.439 $\pm$ 0.024	★
Mayrit 1374283	05 37 15.37	-02 30 53.4	12.176 $\pm$ 1.00	11.364 $\pm$ 0.024	11.006 $\pm$ 0.025	10.877 $\pm$ 0.025	★
Mayrit 1245057	05 39 54.29	-02 24 38.6	12.808 $\pm$ 0.03	11.371 $\pm$ 0.046	10.625 $\pm$ 0.044	10.346 $\pm$ 0.043	★
Mayrit 157155	05 38 49.17	-02 38 22.2	12.891 $\pm$ 0.02	11.389 $\pm$ 0.026	10.663 $\pm$ 0.023	10.511 $\pm$ 0.022	★
Mayrit 596059	05 39 18.83	-02 30 53.1	12.882 $\pm$ 0.16	11.400 $\pm$ 0.028	10.638 $\pm$ 0.026	10.340 $\pm$ 0.021	★
Mayrit 1248183	05 38 39.82	-02 56 46.2	12.778 $\pm$ 0.02	11.413 $\pm$ 0.027	10.744 $\pm$ 0.023	10.439 $\pm$ 0.021	★
Mayrit 1541051	05 40 05.11	-02 19 59.1	12.950 $\pm$ 0.03	11.459 $\pm$ 0.026	10.767 $\pm$ 0.024	10.542 $\pm$ 0.021	★
Mayrit 97212	05 38 41.29	-02 37 22.6	12.714 $\pm$ 0.02	11.461 $\pm$ 0.026	10.797 $\pm$ 0.023	10.585 $\pm$ 0.024	★
Mayrit 1233042	05 39 40.17	-02 20 48.0	12.715 $\pm$ 0.03	11.495 $\pm$ 0.024	10.632 $\pm$ 0.024	10.029 $\pm$ 0.021	★
Mayrit 1269083	05 40 08.89	-02 33 33.7	13.907 $\pm$ 0.03	11.501 $\pm$ 0.026	10.546 $\pm$ 0.023	9.911 $\pm$ 0.024	★
Mayrit 348349	05 38 40.27	-02 30 18.5	12.839 $\pm$ 0.02	11.512 $\pm$ 0.026	10.763 $\pm$ 0.023	10.395 $\pm$ 0.025	★
Mayrit 203283	05 38 31.58	-02 35 14.9	13.384 $\pm$ 0.02	11.516 $\pm$ 0.030	10.705 $\pm$ 0.023	10.352 $\pm$ 0.022	★
Mayrit 653170	05 38 52.01	-02 46 43.7	12.719 $\pm$ 0.02	11.518 $\pm$ 0.026	10.774 $\pm$ 0.024	10.421 $\pm$ 0.021	★
Mayrit 180277	05 38 32.84	-02 35 39.2	12.739 $\pm$ 0.02	11.544 $\pm$ 0.027	10.896 $\pm$ 0.024	10.730 $\pm$ 0.028	★
Mayrit 374056	05 39 05.41	-02 32 30.3	12.828 $\pm$ 0.16	11.547 $\pm$ 0.027	10.860 $\pm$ 0.024	10.667 $\pm$ 0.021	★
Mayrit 1400036	05 39 39.38	-02 17 04.5	13.164 $\pm$ 0.03	11.611 $\pm$ 0.023	10.714 $\pm$ 0.023	10.172 $\pm$ 0.024	★
Mayrit 1652046	05 40 03.65	-02 16 46.1	13.061 $\pm$ 0.03	11.611 $\pm$ 0.026	10.863 $\pm$ 0.024	10.585 $\pm$ 0.019	★
Mayrit 403090	05 39 11.63	-02 36 02.9	13.289 $\pm$ 0.16	11.620 $\pm$ 0.027	10.972 $\pm$ 0.026	10.748 $\pm$ 0.021	★
Mayrit 332168	05 38 49.22	-02 41 25.1	13.250 $\pm$ 0.02	11.670 $\pm$ 0.026	11.002 $\pm$ 0.027	10.730 $\pm$ 0.024	
Mayrit 1207349	05 38 29.16	-02 16 15.7	12.954 $\pm$ 0.02	11.697 $\pm$ 0.024	11.021 $\pm$ 0.024	10.759 $\pm$ 0.019	★
Mayrit 156353	05 38 43.55	-02 33 25.4	13.133 $\pm$ 0.02	11.716 $\pm$ 0.028	10.989 $\pm$ 0.023	10.751 $\pm$ 0.024	★
Mayrit 1250070	05 40 03.38	-02 29 01.4	13.197 $\pm$ 0.03	11.723 $\pm$ 0.026	11.026 $\pm$ 0.023	10.808 $\pm$ 0.022	★
Mayrit 1082013	05 39 01.37	-02 18 27.5	13.079 $\pm$ 0.02	11.733 $\pm$ 0.027	10.842 $\pm$ 0.023	10.335 $\pm$ 0.023	★
Mayrit 53049	05 38 47.46	-02 35 25.2	12.889 $\pm$ 0.02	11.737 $\pm$ 0.045	10.971 $\pm$ 0.027	10.717 $\pm$ 0.025	★
Mayrit 662301	05 38 06.74	-02 30 22.8	13.230 $\pm$ 1.00	11.764 $\pm$ 0.026	10.924 $\pm$ 0.023	10.544 $\pm$ 0.022	★
Mayrit 1082115	05 39 50.39	-02 43 30.8	13.085 $\pm$ 0.03	11.770 $\pm$ 0.028	10.976 $\pm$ 0.023	10.768 $\pm$ 0.021	

**Table A.6.** The Mayrit catalogue: J2000 coordinates and  $IJHK_s$ -band magnitudes of  $\sigma$  Orionis members and candidate members (cont.).

Name	$\alpha$ (J2000)	$\delta$ (J2000)	$I \pm \delta I$ (mag)	$J \pm \delta J$ (mag)	$H \pm \delta H$ (mag)	$K_s \pm \delta K_s$ (mag)	Young
Mayrit 83207	05 38 42.28	-02 37 14.8	12.996 $\pm$ 0.02	11.772 $\pm$ 0.026	10.988 $\pm$ 0.023	10.772 $\pm$ 0.022	★
Mayrit 1273081	05 40 08.67	-02 32 43.2	13.900 $\pm$ 0.03	11.774 $\pm$ 0.027	11.147 $\pm$ 0.023	10.852 $\pm$ 0.022	
Mayrit 1476077	05 40 20.77	-02 30 29.9	13.309 $\pm$ 0.03	11.818 $\pm$ 0.032	11.119 $\pm$ 0.023	10.887 $\pm$ 0.019	
Mayrit 871071	05 39 39.82	-02 31 21.8	13.073 $\pm$ 0.03	11.842 $\pm$ 0.030	10.901 $\pm$ 0.023	10.218 $\pm$ 0.019	★
Mayrit 1403026	05 39 26.40	-02 15 03.5	13.175 $\pm$ 0.16	11.844 $\pm$ 0.024	11.106 $\pm$ 0.027	10.591 $\pm$ 0.024	★
Mayrit 1449349	05 38 26.57	-02 12 17.4	13.678 $\pm$ 0.03	11.851 $\pm$ 0.028	10.984 $\pm$ 0.024	10.583 $\pm$ 0.023	
Mayrit 1748052	05 40 17.02	-02 18 11.2	13.297 $\pm$ 0.03	11.892 $\pm$ 0.026	11.113 $\pm$ 0.023	10.895 $\pm$ 0.024	★
Mayrit 797272	05 37 51.61	-02 35 25.7	13.446 $\pm$ 1.00	11.894 $\pm$ 0.026	11.172 $\pm$ 0.023	10.977 $\pm$ 0.022	★
Mayrit 30241	05 38 43.02	-02 36 14.6	13.312 $\pm$ 0.02	11.908 $\pm$ 0.036	11.051 $\pm$ 0.024	10.632 $\pm$ 0.028	
Mayrit 1011159	05 39 08.53	-02 51 46.6	13.195 $\pm$ 0.16	11.948 $\pm$ 0.024	11.201 $\pm$ 0.023	11.028 $\pm$ 0.024	★
Mayrit 609206	05 38 27.26	-02 45 09.7	12.847 $\pm$ 0.02	11.955 $\pm$ 0.028	10.792 $\pm$ 0.026	9.944 $\pm$ 0.028	★
Mayrit 1500066	05 40 16.07	-02 25 44.6	13.379 $\pm$ 0.03	11.975 $\pm$ 0.027	11.193 $\pm$ 0.024	10.944 $\pm$ 0.028	
Mayrit 165257	05 38 34.06	-02 36 37.5	13.679 $\pm$ 0.03	11.980 $\pm$ 0.027	11.330 $\pm$ 0.024	11.077 $\pm$ 0.027	★
Mayrit 359179	05 38 45.38	-02 41 59.4	13.445 $\pm$ 0.03	11.988 $\pm$ 0.030	11.329 $\pm$ 0.029	11.039 $\pm$ 0.027	★
Mayrit 497054	05 39 11.51	-02 31 06.5	13.619 $\pm$ 0.15	11.994 $\pm$ 0.028	11.193 $\pm$ 0.024	10.734 $\pm$ 0.019	★
Mayrit 92149	05 38 47.92	-02 37 19.2	13.226 $\pm$ 0.02	12.018 $\pm$ 0.042	11.239 $\pm$ 0.046	10.776 $\pm$ 0.037	★
Mayrit 1411131	05 39 56.02	-02 51 22.8	13.716 $\pm$ 0.04	12.035 $\pm$ 0.040	11.371 $\pm$ 0.039	11.006 $\pm$ 0.029	
Mayrit 67128	05 38 48.29	-02 36 41.0	13.816 $\pm$ 0.03	12.040 $\pm$ 0.026	11.398 $\pm$ 0.026	11.141 $\pm$ 0.021	
Mayrit 1304203	05 38 11.04	-02 56 01.8	13.554 $\pm$ 1.00	12.066 $\pm$ 0.023	11.291 $\pm$ 0.023	11.105 $\pm$ 0.021	
Mayrit 757219	05 38 13.16	-02 45 51.0	13.625 $\pm$ 1.00	12.070 $\pm$ 0.026	11.255 $\pm$ 0.024	10.772 $\pm$ 0.023	★
Mayrit 61105	05 38 48.68	-02 36 16.2	13.366 $\pm$ 0.02	12.107 $\pm$ 0.028	11.372 $\pm$ 0.024	11.171 $\pm$ 0.022	★
Mayrit 1298302	05 37 31.54	-02 24 27.0	13.634 $\pm$ 1.00	12.109 $\pm$ 0.027	11.359 $\pm$ 0.024	11.171 $\pm$ 0.024	
Mayrit 947192	05 38 31.60	-02 51 26.9	13.575 $\pm$ 0.03	12.110 $\pm$ 0.028	11.184 $\pm$ 0.023	10.976 $\pm$ 0.021	
Mayrit 1564349	05 38 25.50	-02 10 22.9	13.447 $\pm$ 0.03	12.111 $\pm$ 0.027	11.397 $\pm$ 0.030	11.180 $\pm$ 0.026	★
Mayrit 547270	05 38 08.27	-02 35 56.3	13.974 $\pm$ 1.00	12.142 $\pm$ 0.026	11.376 $\pm$ 0.023	11.047 $\pm$ 0.019	★
Mayrit 530005	05 38 47.55	-02 27 12.0	14.053 $\pm$ 0.03	12.143 $\pm$ 0.032	11.502 $\pm$ 0.037	11.274 $\pm$ 0.030	★
Mayrit 1178032	05 39 26.81	-02 19 24.8	13.559 $\pm$ 0.15	12.146 $\pm$ 0.026	11.375 $\pm$ 0.024	11.121 $\pm$ 0.021	
Mayrit 734047	05 39 20.44	-02 27 36.8	13.771 $\pm$ 0.15	12.149 $\pm$ 0.027	11.425 $\pm$ 0.026	11.168 $\pm$ 0.023	★
Mayrit 1080024	05 39 14.53	-02 19 36.7	13.655 $\pm$ 0.15	12.165 $\pm$ 0.027	11.474 $\pm$ 0.023	11.248 $\pm$ 0.021	★
Mayrit 203260	05 38 31.41	-02 36 33.8	13.778 $\pm$ 0.03	12.174 $\pm$ 0.027	11.473 $\pm$ 0.024	10.986 $\pm$ 0.025	★
Mayrit 1574059	05 40 14.72	-02 22 26.5	13.843 $\pm$ 0.03	12.195 $\pm$ 0.026	11.407 $\pm$ 0.024	11.162 $\pm$ 0.027	★
Mayrit 841079	05 39 39.83	-02 33 16.0	14.905 $\pm$ 0.03	12.218 $\pm$ 0.026	10.961 $\pm$ 0.024	10.074 $\pm$ 0.019	★
Mayrit 489165	05 38 53.17	-02 43 52.8	13.474 $\pm$ 0.03	12.235 $\pm$ 0.030	11.506 $\pm$ 0.030	11.305 $\pm$ 0.030	★
Mayrit 240355	05 38 43.34	-02 32 00.8	14.148 $\pm$ 0.03	12.237 $\pm$ 0.026	11.625 $\pm$ 0.024	11.346 $\pm$ 0.025	★
Mayrit 1411049	05 39 55.95	-02 20 36.6	13.761 $\pm$ 0.03	12.269 $\pm$ 0.030	11.510 $\pm$ 0.024	11.291 $\pm$ 0.025	
Mayrit 1073209	05 38 09.94	-02 51 37.7	14.043 $\pm$ 1.00	12.337 $\pm$ 0.023	11.566 $\pm$ 0.023	11.239 $\pm$ 0.019	★
Mayrit 1207010	05 38 58.32	-02 16 10.1	13.516 $\pm$ 0.03	12.338 $\pm$ 0.028	11.561 $\pm$ 0.026	11.282 $\pm$ 0.023	★
Mayrit 1446053	05 40 01.96	-02 21 32.6	14.064 $\pm$ 0.03	12.339 $\pm$ 0.027	11.579 $\pm$ 0.023	11.254 $\pm$ 0.024	★
Mayrit 873229	05 38 01.07	-02 45 38.0	14.615 $\pm$ 1.00	12.412 $\pm$ 0.028	11.622 $\pm$ 0.024	11.123 $\pm$ 0.024	★
Mayrit 986106	05 39 47.99	-02 40 32.1	13.976 $\pm$ 0.03	12.426 $\pm$ 0.027	11.648 $\pm$ 0.023	11.431 $\pm$ 0.024	
Mayrit 660067	05 39 25.34	-02 31 43.7	14.010 $\pm$ 0.15	12.432 $\pm$ 0.030	11.617 $\pm$ 0.023	11.360 $\pm$ 0.019	
Mayrit 102101	05 38 51.45	-02 36 20.6	14.248 $\pm$ 0.03	12.438 $\pm$ 0.027	11.813 $\pm$ 0.023	11.552 $\pm$ 0.025	★
Mayrit 426140	05 39 02.98	-02 41 27.2	13.979 $\pm$ 0.03	12.438 $\pm$ 0.026	11.608 $\pm$ 0.023	11.156 $\pm$ 0.028	★
Mayrit 1610344	05 38 14.54	-02 10 15.3	14.133 $\pm$ 1.00	12.476 $\pm$ 0.026	11.799 $\pm$ 0.027	11.526 $\pm$ 0.019	
Mayrit 757321	05 38 13.20	-02 26 08.8	14.178 $\pm$ 1.00	12.479 $\pm$ 0.028	11.816 $\pm$ 0.027	11.551 $\pm$ 0.024	★
Mayrit 559009	05 38 50.39	-02 26 47.7	14.045 $\pm$ 0.03	12.502 $\pm$ 0.024	11.836 $\pm$ 0.023	11.542 $\pm$ 0.019	★
Mayrit 1250010	05 38 58.55	-02 15 27.8	13.946 $\pm$ 0.03	12.514 $\pm$ 0.027	11.790 $\pm$ 0.024	11.551 $\pm$ 0.021	
Mayrit 508194	05 38 36.69	-02 44 13.7	14.335 $\pm$ 0.03	12.538 $\pm$ 0.027	11.891 $\pm$ 0.026	11.623 $\pm$ 0.028	
Mayrit 91024	05 38 47.19	-02 34 36.8	14.379 $\pm$ 0.03	12.564 $\pm$ 0.026	11.769 $\pm$ 0.023	11.293 $\pm$ 0.025	★
Mayrit 387252	05 38 20.21	-02 38 01.6	14.321 $\pm$ 0.03	12.577 $\pm$ 0.026	11.858 $\pm$ 0.023	11.606 $\pm$ 0.024	★
Mayrit 1273031	05 39 28.83	-02 17 51.4	14.377 $\pm$ 0.18	12.599 $\pm$ 0.026	11.888 $\pm$ 0.023	11.674 $\pm$ 0.019	
Mayrit 1279052	05 39 51.73	-02 22 47.2	14.796 $\pm$ 0.03	12.601 $\pm$ 0.023	12.011 $\pm$ 0.023	11.678 $\pm$ 0.024	★
Mayrit 544049	05 39 12.32	-02 30 06.4	14.937 $\pm$ 0.23	12.608 $\pm$ 0.027	12.055 $\pm$ 0.026	11.733 $\pm$ 0.021	

**Table A.6.** The Mayrit catalogue: J2000 coordinates and  $IJHK_s$ -band magnitudes of  $\sigma$  Orionis members and candidate members (cont.).

Name	$\alpha$ (J2000)	$\delta$ (J2000)	$I \pm \delta I$ (mag)	$J \pm \delta J$ (mag)	$H \pm \delta H$ (mag)	$K_s \pm \delta K_s$ (mag)	Young
Mayrit 453037	05 39 02.77	-02 29 55.8	14.147 $\pm$ 0.03	12.611 $\pm$ 0.028	12.001 $\pm$ 0.024	11.694 $\pm$ 0.023	★
Mayrit 234269	05 38 29.12	-02 36 02.7	13.938 $\pm$ 0.03	12.635 $\pm$ 0.028	11.887 $\pm$ 0.024	11.692 $\pm$ 0.030	★
Mayrit 380287	05 38 20.50	-02 34 09.0	15.388 $\pm$ 0.05	12.652 $\pm$ 0.026	11.918 $\pm$ 0.023	11.648 $\pm$ 0.019	★
Mayrit 861230	05 38 00.56	-02 45 09.7	14.678 $\pm$ 1.00	12.730 $\pm$ 0.026	12.080 $\pm$ 0.023	11.820 $\pm$ 0.024	
Mayrit 835208	05 38 18.25	-02 48 14.3	14.146 $\pm$ 0.03	12.760 $\pm$ 0.026	12.023 $\pm$ 0.023	11.803 $\pm$ 0.021	★
Mayrit 1245062	05 39 58.26	-02 26 18.8	14.402 $\pm$ 0.03	12.778 $\pm$ 0.026	12.050 $\pm$ 0.023	11.831 $\pm$ 0.025	★
Mayrit 165337	05 38 40.54	-02 33 27.6	14.551 $\pm$ 0.04	12.795 $\pm$ 0.027	12.125 $\pm$ 0.024	11.858 $\pm$ 0.025	★
Mayrit 1016202	05 38 18.86	-02 51 38.8	14.229 $\pm$ 0.03	12.808 $\pm$ 0.023	12.039 $\pm$ 0.023	11.733 $\pm$ 0.021	★
Mayrit 870187	05 38 37.45	-02 50 23.6	14.612 $\pm$ 0.04	12.809 $\pm$ 0.026	12.176 $\pm$ 0.023	11.923 $\pm$ 0.021	
Mayrit 884312	05 38 00.97	-02 26 07.9	14.354 $\pm$ 1.00	12.824 $\pm$ 0.028	12.147 $\pm$ 0.026	11.931 $\pm$ 0.027	★
Mayrit 1041082	05 39 53.63	-02 33 42.7	14.440 $\pm$ 0.03	12.825 $\pm$ 0.028	12.064 $\pm$ 0.026	11.590 $\pm$ 0.025	★
Mayrit 265282	05 38 27.51	-02 35 04.2	14.272 $\pm$ 0.03	12.826 $\pm$ 0.028	12.113 $\pm$ 0.024	11.860 $\pm$ 0.028	★
Mayrit 590076	05 39 22.87	-02 33 33.1	14.394 $\pm$ 0.18	12.832 $\pm$ 0.026	12.131 $\pm$ 0.024	11.869 $\pm$ 0.027	★
Mayrit 68191	05 38 43.87	-02 37 06.8	14.713 $\pm$ 0.04	12.842 $\pm$ 0.026	12.145 $\pm$ 0.023	11.774 $\pm$ 0.024	★
Mayrit 846052	05 39 29.35	-02 27 21.0	14.807 $\pm$ 0.22	12.843 $\pm$ 0.030	12.022 $\pm$ 0.026	11.462 $\pm$ 0.026	★
Mayrit 687156	05 39 03.57	-02 46 27.0	14.340 $\pm$ 0.03	12.844 $\pm$ 0.028	12.123 $\pm$ 0.024	11.863 $\pm$ 0.025	★
Mayrit 335352	05 38 41.60	-02 30 28.9	14.382 $\pm$ 0.03	12.844 $\pm$ 0.027	12.140 $\pm$ 0.023	11.933 $\pm$ 0.024	★
Mayrit 1603044	05 39 59.47	-02 16 52.3	14.759 $\pm$ 0.03	12.861 $\pm$ 0.027	12.214 $\pm$ 0.024	11.957 $\pm$ 0.024	
Mayrit 1446036	05 39 40.98	-02 16 24.4	14.973 $\pm$ 0.03	12.871 $\pm$ 0.024	12.152 $\pm$ 0.024	11.736 $\pm$ 0.021	★
Mayrit 571037	05 39 07.59	-02 28 23.4	14.581 $\pm$ 0.19	12.884 $\pm$ 0.030	12.141 $\pm$ 0.024	11.955 $\pm$ 0.026	★
Mayrit 252059	05 38 59.23	-02 33 51.4	14.659 $\pm$ 0.04	12.888 $\pm$ 0.027	11.979 $\pm$ 0.023	11.401 $\pm$ 0.028	★
Mayrit 785038	05 39 17.18	-02 25 43.4	14.432 $\pm$ 0.18	12.901 $\pm$ 0.028	12.124 $\pm$ 0.027	11.933 $\pm$ 0.024	★
Mayrit 105092	05 38 51.74	-02 36 03.4	14.865 $\pm$ 0.04	12.909 $\pm$ 0.027	12.287 $\pm$ 0.027	12.026 $\pm$ 0.022	
Mayrit 578189	05 38 39.03	-02 45 32.2	14.303 $\pm$ 0.03	12.913 $\pm$ 0.028	12.195 $\pm$ 0.023	11.890 $\pm$ 0.028	★
Mayrit 1147198	05 38 21.19	-02 54 11.1	14.828 $\pm$ 0.04	12.940 $\pm$ 0.024	12.255 $\pm$ 0.024	11.864 $\pm$ 0.019	★
Mayrit 1691180	05 38 43.80	-03 04 11.5	14.662 $\pm$ 0.04	12.945 $\pm$ 0.027	12.212 $\pm$ 0.024	11.886 $\pm$ 0.025	
Mayrit 552137	05 39 10.04	-02 42 42.5	14.700 $\pm$ 0.21	12.967 $\pm$ 0.028	12.209 $\pm$ 0.027	11.966 $\pm$ 0.022	
Mayrit 100048	05 38 49.70	-02 34 52.6	14.587 $\pm$ 0.04	12.985 $\pm$ 0.026	12.337 $\pm$ 0.023	12.091 $\pm$ 0.027	★
Mayrit 1087058	05 39 46.61	-02 26 31.3	14.983 $\pm$ 0.03	12.986 $\pm$ 0.024	12.355 $\pm$ 0.024	12.049 $\pm$ 0.019	
Mayrit 1765240	05 37 03.00	-02 50 49.0	14.827 $\pm$ 1.00	12.995 $\pm$ 0.024	12.304 $\pm$ 0.025	12.037 $\pm$ 0.025	
Mayrit 1027277	05 37 36.67	-02 34 00.3	14.596 $\pm$ 1.00	12.999 $\pm$ 0.028	12.303 $\pm$ 0.023	12.050 $\pm$ 0.025	★
Mayrit 1003181	05 38 43.76	-02 52 42.8	14.810 $\pm$ 0.04	13.013 $\pm$ 0.028	12.387 $\pm$ 0.027	12.098 $\pm$ 0.021	★
Mayrit 887313	05 38 01.67	-02 25 52.7	14.655 $\pm$ 1.00	13.026 $\pm$ 0.030	12.324 $\pm$ 0.024	12.066 $\pm$ 0.030	
Mayrit 897077	05 39 43.19	-02 32 43.3	14.967 $\pm$ 0.23	13.032 $\pm$ 0.026	12.299 $\pm$ 0.024	11.913 $\pm$ 0.021	★
Mayrit 1329304	05 37 30.95	-02 23 42.8	14.601 $\pm$ 1.00	13.035 $\pm$ 0.028	12.391 $\pm$ 0.023	12.092 $\pm$ 0.025	★
Mayrit 461051	05 39 08.78	-02 31 11.5	15.206 $\pm$ 0.24	13.036 $\pm$ 0.027	12.156 $\pm$ 0.024	11.702 $\pm$ 0.023	★
Mayrit 126250	05 38 36.88	-02 36 43.2	14.830 $\pm$ 0.04	13.044 $\pm$ 0.027	12.449 $\pm$ 0.023	12.123 $\pm$ 0.025	
Mayrit 124140	05 38 50.03	-02 37 35.5	14.867 $\pm$ 0.04	13.047 $\pm$ 0.026	12.363 $\pm$ 0.024	12.103 $\pm$ 0.025	
Mayrit 1797077	05 40 41.46	-02 29 07.5	15.208 $\pm$ 0.04	13.066 $\pm$ 0.028	12.441 $\pm$ 0.030	12.146 $\pm$ 0.027	
Mayrit 1493050	05 40 01.01	-02 19 59.8	15.307 $\pm$ 0.04	13.096 $\pm$ 0.028	12.501 $\pm$ 0.023	12.249 $\pm$ 0.025	★
Mayrit 344206	05 38 34.60	-02 41 08.8	14.764 $\pm$ 0.04	13.103 $\pm$ 0.028	12.454 $\pm$ 0.023	12.123 $\pm$ 0.027	★
Mayrit 94106	05 38 50.78	-02 36 26.8	14.993 $\pm$ 0.04	13.112 $\pm$ 0.026	12.445 $\pm$ 0.027	12.200 $\pm$ 0.025	★
Mayrit 1426063	05 40 09.33	-02 25 06.7	15.148 $\pm$ 0.04	13.147 $\pm$ 0.027	12.498 $\pm$ 0.024	12.147 $\pm$ 0.027	★
Mayrit 756124	05 39 26.77	-02 42 58.3	15.143 $\pm$ 0.24	13.178 $\pm$ 0.027	12.399 $\pm$ 0.026	12.118 $\pm$ 0.024	★
Mayrit 1472090	05 40 23.01	-02 36 10.1	14.851 $\pm$ 0.03	13.193 $\pm$ 0.027	12.499 $\pm$ 0.024	12.243 $\pm$ 0.021	★
Mayrit 623079	05 39 25.61	-02 34 04.3	15.108 $\pm$ 0.24	13.196 $\pm$ 0.032	12.545 $\pm$ 0.024	12.249 $\pm$ 0.054	
Mayrit 498234	05 38 17.78	-02 40 50.1	14.984 $\pm$ 0.04	13.204 $\pm$ 0.027	12.583 $\pm$ 0.024	12.241 $\pm$ 0.021	★
Mayrit 53144	05 38 46.85	-02 36 43.5	15.218 $\pm$ 0.04	13.223 $\pm$ 0.026	12.676 $\pm$ 0.024	12.350 $\pm$ 0.025	★
Mayrit 1090331	05 38 08.98	-02 20 11.0	14.965 $\pm$ 1.00	13.238 $\pm$ 0.030	12.588 $\pm$ 0.027	12.307 $\pm$ 0.024	
Mayrit 1396348	05 38 25.03	-02 13 16.2	14.576 $\pm$ 0.04	13.241 $\pm$ 0.026	12.455 $\pm$ 0.024	12.112 $\pm$ 0.023	
Mayrit 468096	05 39 15.83	-02 36 50.7	15.212 $\pm$ 0.24	13.251 $\pm$ 0.027	12.537 $\pm$ 0.027	12.219 $\pm$ 0.030	★
Mayrit 1316164	05 39 08.94	-02 57 05.0	14.772 $\pm$ 0.21	13.263 $\pm$ 0.023	12.589 $\pm$ 0.024	12.319 $\pm$ 0.024	★
Mayrit 1630286	05 37 00.30	-02 28 26.6	15.060 $\pm$ 1.00	13.268 $\pm$ 0.029	12.617 $\pm$ 0.027	12.361 $\pm$ 0.030	



**Table A.6.** The Mayrit catalogue: J2000 coordinates and  $IJHK_s$ -band magnitudes of  $\sigma$  Orionis members and candidate members (cont.).

Name	$\alpha$ (J2000)	$\delta$ (J2000)	$I \pm \delta I$ (mag)	$J \pm \delta J$ (mag)	$H \pm \delta H$ (mag)	$K_s \pm \delta K_s$ (mag)	Young
Mayrit 1648346	05 38 17.47	-02 09 23.6	15.130 $\pm$ 1.00	13.275 $\pm$ 0.023	12.658 $\pm$ 0.027	12.363 $\pm$ 0.029	★
Mayrit 633059	05 39 20.97	-02 30 33.5	15.738 $\pm$ 0.24	13.286 $\pm$ 0.027	12.753 $\pm$ 0.027	12.438 $\pm$ 0.029	★
Mayrit 767245	05 37 58.40	-02 41 26.2	15.447 $\pm$ 1.00	13.287 $\pm$ 0.028	12.703 $\pm$ 0.024	12.424 $\pm$ 0.026	★
Mayrit 459224	05 38 23.55	-02 41 31.8	15.171 $\pm$ 1.00	13.294 $\pm$ 0.028	12.740 $\pm$ 0.026	12.398 $\pm$ 0.023	★
Mayrit 1542209	05 37 54.53	-02 58 26.5	15.661 $\pm$ 1.00	13.306 $\pm$ 0.026	12.709 $\pm$ 0.024	12.412 $\pm$ 0.030	★
Mayrit 1114078	05 39 57.53	-02 32 12.0	15.173 $\pm$ 0.04	13.314 $\pm$ 0.027	12.687 $\pm$ 0.023	12.357 $\pm$ 0.024	
Mayrit 631045	05 39 14.47	-02 28 33.4	15.099 $\pm$ 0.24	13.344 $\pm$ 0.028	12.646 $\pm$ 0.026	12.340 $\pm$ 0.026	★
Mayrit 1081097	05 39 56.46	-02 38 03.5	15.417 $\pm$ 0.04	13.349 $\pm$ 0.028	12.795 $\pm$ 0.024	12.427 $\pm$ 0.030	★
Mayrit 1176297	05 37 35.14	-02 26 57.7	15.591 $\pm$ 1.00	13.357 $\pm$ 0.027	12.759 $\pm$ 0.024	12.511 $\pm$ 0.028	
Mayrit 270181	05 38 44.49	-02 40 30.5	14.992 $\pm$ 0.04	13.365 $\pm$ 0.034	12.724 $\pm$ 0.033	12.497 $\pm$ 0.035	★
Mayrit 89175	05 38 45.28	-02 37 29.3	15.479 $\pm$ 0.05	13.368 $\pm$ 0.026	12.604 $\pm$ 0.036	12.090 $\pm$ 0.035	★
Mayrit 355060	05 39 05.24	-02 33 00.6	15.159 $\pm$ 0.24	13.394 $\pm$ 0.028	12.720 $\pm$ 0.024	12.462 $\pm$ 0.027	★
Mayrit 1482212	05 37 52.11	-02 56 55.2	15.417 $\pm$ 1.00	13.395 $\pm$ 0.028	12.826 $\pm$ 0.024	12.515 $\pm$ 0.025	★
Mayrit 856047	05 39 26.47	-02 26 15.5	15.021 $\pm$ 0.24	13.400 $\pm$ 0.029	12.670 $\pm$ 0.029	12.464 $\pm$ 0.030	★
Mayrit 1216053	05 39 49.45	-02 23 45.9	15.278 $\pm$ 0.04	13.404 $\pm$ 0.030	12.758 $\pm$ 0.030	12.438 $\pm$ 0.030	★
Mayrit 441103	05 39 13.47	-02 37 39.1	15.647 $\pm$ 0.24	13.409 $\pm$ 0.027	12.771 $\pm$ 0.023	12.497 $\pm$ 0.027	
Mayrit 966341	05 38 23.58	-02 20 47.6	15.443 $\pm$ 1.00	13.412 $\pm$ 0.026	12.799 $\pm$ 0.029	12.490 $\pm$ 0.031	★
Mayrit 1249081	05 40 07.08	-02 32 44.7	15.280 $\pm$ 0.04	13.419 $\pm$ 0.026	12.807 $\pm$ 0.023	12.540 $\pm$ 0.025	
Mayrit 839077	05 39 39.32	-02 32 52.3	15.763 $\pm$ 0.24	13.435 $\pm$ 0.027	12.901 $\pm$ 0.023	12.526 $\pm$ 0.027	
Mayrit 326008	05 38 47.66	-02 30 37.4	15.392 $\pm$ 0.05	13.449 $\pm$ 0.030	12.847 $\pm$ 0.026	12.585 $\pm$ 0.025	★
Mayrit 1158064	05 39 54.21	-02 27 32.6	15.298 $\pm$ 0.04	13.458 $\pm$ 0.034	12.874 $\pm$ 0.029	12.668 $\pm$ 0.037	★
Mayrit 589213	05 38 23.32	-02 44 14.2	15.302 $\pm$ 1.00	13.462 $\pm$ 0.027	12.852 $\pm$ 0.023	12.562 $\pm$ 0.024	★
Mayrit 1416280	05 37 11.68	-02 31 56.7	15.424 $\pm$ 1.00	13.487 $\pm$ 0.036	12.928 $\pm$ 0.035	12.668 $\pm$ 0.033	
Mayrit 764055	05 39 26.33	-02 28 37.7	15.474 $\pm$ 0.24	13.496 $\pm$ 0.026	12.842 $\pm$ 0.023	12.565 $\pm$ 0.024	★
Mayrit 809248	05 37 54.86	-02 41 09.2	15.461 $\pm$ 1.00	13.501 $\pm$ 0.028	12.901 $\pm$ 0.027	12.644 $\pm$ 0.027	★
Mayrit 1524081	05 40 25.10	-02 31 50.1	15.386 $\pm$ 0.05	13.512 $\pm$ 0.027	12.783 $\pm$ 0.024	12.251 $\pm$ 0.026	
Mayrit 249099	05 39 01.16	-02 36 38.9	15.486 $\pm$ 0.24	13.522 $\pm$ 0.027	12.895 $\pm$ 0.027	12.605 $\pm$ 0.027	★
Mayrit 1773275	05 36 46.91	-02 33 28.3	15.309 $\pm$ 1.00	13.547 $\pm$ 0.024	12.968 $\pm$ 0.030	12.660 $\pm$ 0.028	★
Mayrit 563178	05 38 45.98	-02 45 23.2	15.492 $\pm$ 0.05	13.561 $\pm$ 0.028	12.962 $\pm$ 0.024	12.691 $\pm$ 0.028	
Mayrit 447254	05 38 16.10	-02 38 04.9	15.312 $\pm$ 1.00	13.583 $\pm$ 0.027	12.878 $\pm$ 0.023	12.612 $\pm$ 0.032	★
Mayrit 643039	05 39 11.83	-02 27 41.0	15.446 $\pm$ 0.24	13.607 $\pm$ 0.026	12.977 $\pm$ 0.024	12.650 $\pm$ 0.027	
Mayrit 551105	05 39 20.24	-02 38 25.9	15.889 $\pm$ 0.24	13.608 $\pm$ 0.028	13.044 $\pm$ 0.027	12.776 $\pm$ 0.024	
Mayrit 913333	05 38 17.18	-02 22 25.7	15.839 $\pm$ 1.00	13.612 $\pm$ 0.026	13.031 $\pm$ 0.027	12.737 $\pm$ 0.030	
Mayrit 1391255	05 37 15.16	-02 42 01.6	15.343 $\pm$ 1.00	13.617 $\pm$ 0.029	12.996 $\pm$ 0.031	12.776 $\pm$ 0.030	★
Mayrit 1788137	05 40 06.76	-02 57 38.9	15.897 $\pm$ 0.05	13.652 $\pm$ 0.036	13.124 $\pm$ 0.039	12.603 $\pm$ 0.031	
Mayrit 880185	05 38 40.08	-02 50 37.1	15.534 $\pm$ 0.05	13.669 $\pm$ 0.031	13.079 $\pm$ 0.024	12.804 $\pm$ 0.021	★
Mayrit 992084	05 39 50.57	-02 34 13.7	15.524 $\pm$ 0.04	13.677 $\pm$ 0.030	13.002 $\pm$ 0.026	12.732 $\pm$ 0.027	★
Mayrit 703333	05 38 23.33	-02 25 34.6	15.881 $\pm$ 1.00	13.685 $\pm$ 0.027	12.928 $\pm$ 0.029	12.424 $\pm$ 0.024	★
Mayrit 1462013	05 39 06.97	-02 12 16.9	15.877 $\pm$ 0.24	13.698 $\pm$ 0.028	13.107 $\pm$ 0.027	12.959 $\pm$ 0.032	
Mayrit 214321	05 38 35.83	-02 33 13.3	15.452 $\pm$ 0.06	13.704 $\pm$ 0.081	13.138 $\pm$ 0.055	12.832 $\pm$ 0.050	★
Mayrit 1583183	05 38 38.59	-03 02 20.1	15.303 $\pm$ 0.05	13.711 $\pm$ 0.028	12.962 $\pm$ 0.026	12.566 $\pm$ 0.028	
Mayrit 1714107	05 40 34.40	-02 44 09.6	15.653 $\pm$ 0.05	13.747 $\pm$ 0.028	13.180 $\pm$ 0.027	12.785 $\pm$ 0.023	
Mayrit 329261	05 38 23.08	-02 36 49.4	15.754 $\pm$ 1.00	13.796 $\pm$ 0.028	13.167 $\pm$ 0.026	12.776 $\pm$ 0.019	★
Mayrit 410059	05 39 08.22	-02 32 28.4	15.958 $\pm$ 0.24	13.798 $\pm$ 0.026	13.254 $\pm$ 0.026	12.917 $\pm$ 0.029	
Mayrit 449020	05 38 54.92	-02 28 58.3	15.494 $\pm$ 0.05	13.804 $\pm$ 0.030	13.201 $\pm$ 0.026	12.865 $\pm$ 0.030	★
Mayrit 994017	05 39 03.87	-02 20 08.2	15.685 $\pm$ 0.24	13.826 $\pm$ 0.030	13.155 $\pm$ 0.026	12.876 $\pm$ 0.033	★
Mayrit 412168	05 38 50.61	-02 42 42.9	15.887 $\pm$ 0.06	13.843 $\pm$ 0.030	13.246 $\pm$ 0.026	12.963 $\pm$ 0.038	★
Mayrit 1605033	05 39 43.00	-02 13 33.3	16.482 $\pm$ 0.24	13.901 $\pm$ 0.027	13.278 $\pm$ 0.026	12.990 $\pm$ 0.024	★
Mayrit 219320	05 38 35.29	-02 33 13.1	15.949 $\pm$ 0.06	13.911 $\pm$ 0.036	13.351 $\pm$ 0.023	13.028 $\pm$ 0.030	
Mayrit 1788199	05 38 06.69	-03 04 14.5	15.990 $\pm$ 1.00	13.929 $\pm$ 0.026	13.357 $\pm$ 0.027	13.060 $\pm$ 0.032	
Mayrit 1245076	05 40 05.26	-02 30 52.3	16.074 $\pm$ 0.05	13.945 $\pm$ 0.027	13.371 $\pm$ 0.027	13.071 $\pm$ 0.028	★
Mayrit 458140	05 39 04.59	-02 41 49.4	15.152 $\pm$ 0.24	13.962 $\pm$ 0.043	12.910 $\pm$ 0.040	12.224 $\pm$ 0.035	★
Mayrit 50279	05 38 41.46	-02 35 52.3	15.836 $\pm$ 0.06	14.004 $\pm$ 0.034	13.366 $\pm$ 0.032	12.992 $\pm$ 0.033	★

**Table A.6.** The Mayrit catalogue: J2000 coordinates and  $IJK_s$ -band magnitudes of  $\sigma$  Orionis members and candidate members (cont.).

Name	$\alpha$ (J2000)	$\delta$ (J2000)	$I \pm \delta I$ (mag)	$J \pm \delta J$ (mag)	$H \pm \delta H$ (mag)	$K_s \pm \delta K_s$ (mag)	Young
Mayrit 483174	05 38 48.19	-02 44 00.8	16.225 $\pm$ 0.07	14.073 $\pm$ 0.031	13.468 $\pm$ 0.024	13.153 $\pm$ 0.042	★
Mayrit 316238	05 38 26.84	-02 38 46.1	16.064 $\pm$ 0.07	14.107 $\pm$ 0.035	13.483 $\pm$ 0.029	13.206 $\pm$ 0.040	★
Mayrit 1482130	05 40 00.15	-02 51 59.4	16.802 $\pm$ 0.08	14.136 $\pm$ 0.027	13.578 $\pm$ 0.026	13.187 $\pm$ 0.034	★
Mayrit 558039	05 39 08.09	-02 28 44.8	16.047 $\pm$ 0.24	14.144 $\pm$ 0.031	13.519 $\pm$ 0.027	13.252 $\pm$ 0.039	★
Mayrit 1122053	05 39 44.51	-02 24 43.2	16.329 $\pm$ 0.06	14.167 $\pm$ 0.029	13.539 $\pm$ 0.024	13.150 $\pm$ 0.032	★
Mayrit 1468346	05 38 21.80	-02 12 13.6	15.364 $\pm$ 0.05	14.208 $\pm$ 0.034	13.208 $\pm$ 0.027	12.513 $\pm$ 0.033	
Mayrit 728257	05 37 57.46	-02 38 44.4	16.348 $\pm$ 1.00	14.226 $\pm$ 0.030	13.634 $\pm$ 0.029	13.285 $\pm$ 0.033	★
Mayrit 855326	05 38 13.21	-02 24 07.5	16.259 $\pm$ 1.00	14.236 $\pm$ 0.031	13.580 $\pm$ 0.027	13.250 $\pm$ 0.037	
Mayrit 1340342	05 38 16.99	-02 14 46.3	16.057 $\pm$ 0.07	14.237 $\pm$ 0.027	13.661 $\pm$ 0.032	13.346 $\pm$ 0.033	★
Mayrit 571197	05 38 33.88	-02 45 07.8	16.036 $\pm$ 0.07	14.250 $\pm$ 0.031	13.676 $\pm$ 0.027	13.346 $\pm$ 0.035	★
Mayrit 36263	05 38 42.39	-02 36 04.5	15.685 $\pm$ 0.06	14.259 $\pm$ 0.068	13.573 $\pm$ 0.044	13.189 $\pm$ 0.044	★
Mayrit 578123	05 39 17.00	-02 41 17.1	16.314 $\pm$ 0.24	14.287 $\pm$ 0.030	13.632 $\pm$ 0.024	13.370 $\pm$ 0.037	
Mayrit 910079	05 39 44.33	-02 33 02.8	16.554 $\pm$ 0.07	14.289 $\pm$ 0.030	13.716 $\pm$ 0.030	13.365 $\pm$ 0.037	
Mayrit 1357018	05 39 12.04	-02 14 26.3	16.594 $\pm$ 0.24	14.340 $\pm$ 0.050	13.811 $\pm$ 0.058	13.477 $\pm$ 0.054	
Mayrit 726005	05 38 49.29	-02 23 57.6	16.573 $\pm$ 0.09	14.362 $\pm$ 0.027	13.699 $\pm$ 0.026	13.197 $\pm$ 0.030	★
Mayrit 942123	05 39 37.60	-02 44 30.5	16.822 $\pm$ 0.08	14.380 $\pm$ 0.031	13.819 $\pm$ 0.027	13.384 $\pm$ 0.034	★
Mayrit 1244205	05 38 10.12	-02 54 50.7	16.651 $\pm$ 1.00	14.391 $\pm$ 0.027	13.757 $\pm$ 0.032	13.425 $\pm$ 0.045	★
Mayrit 264077	05 39 01.94	-02 35 02.9	16.380 $\pm$ 0.08	14.445 $\pm$ 0.035	13.378 $\pm$ 0.030	12.607 $\pm$ 0.030	★
Mayrit 425070	05 39 11.40	-02 33 32.8	16.536 $\pm$ 0.24	14.452 $\pm$ 0.034	13.929 $\pm$ 0.029	13.571 $\pm$ 0.043	★
Mayrit 430007	05 38 48.10	-02 28 53.6	16.443 $\pm$ 0.08	14.470 $\pm$ 0.033	13.840 $\pm$ 0.026	13.435 $\pm$ 0.036	★
Mayrit 1316178	05 38 47.15	-02 57 55.7	17.221 $\pm$ 0.13	14.515 $\pm$ 0.032	13.935 $\pm$ 0.036	13.461 $\pm$ 0.044	★
Mayrit 1129222	05 37 53.98	-02 49 54.5	15.429 $\pm$ 1.00	14.520 $\pm$ 0.030	13.250 $\pm$ 0.024	12.455 $\pm$ 0.033	★
Mayrit 368195	05 38 38.59	-02 41 55.9	16.359 $\pm$ 0.08	14.562 $\pm$ 0.031	13.965 $\pm$ 0.030	13.647 $\pm$ 0.040	★
Mayrit 1045207	05 38 13.31	-02 51 33.0	16.715 $\pm$ 1.00	14.570 $\pm$ 0.034	13.996 $\pm$ 0.033	13.627 $\pm$ 0.045	★
Mayrit 1364078	05 40 13.96	-02 31 27.4	17.591 $\pm$ 0.13	14.570 $\pm$ 0.032	13.975 $\pm$ 0.030	13.567 $\pm$ 0.039	★
Mayrit 653348	05 38 35.36	-02 25 22.2	16.878 $\pm$ 0.10	14.652 $\pm$ 0.033	14.056 $\pm$ 0.036	13.764 $\pm$ 0.041	★
Mayrit 433123	05 39 08.95	-02 39 58.0	17.366 $\pm$ 0.24	14.655 $\pm$ 0.032	14.135 $\pm$ 0.039	13.743 $\pm$ 0.053	★
Mayrit 399314	05 38 25.68	-02 31 21.7	16.627 $\pm$ 0.09	14.666 $\pm$ 0.056	14.070 $\pm$ 0.062	13.837 $\pm$ 0.064	★
Mayrit 538122	05 39 15.10	-02 40 47.6	17.279 $\pm$ 0.24	14.669 $\pm$ 0.034	14.042 $\pm$ 0.032	13.656 $\pm$ 0.045	
Mayrit 1642101	05 40 32.49	-02 40 59.8	17.014 $\pm$ 0.09	14.703 $\pm$ 0.038	14.065 $\pm$ 0.032	13.709 $\pm$ 0.049	★
Mayrit 1045094	05 39 54.33	-02 37 18.9	17.184 $\pm$ 0.10	14.746 $\pm$ 0.031	14.206 $\pm$ 0.037	13.799 $\pm$ 0.048	★
Mayrit 761103	05 39 34.33	-02 38 46.9	17.480 $\pm$ 0.24	14.763 $\pm$ 0.032	14.188 $\pm$ 0.037	13.787 $\pm$ 0.050	★
Mayrit 334118	05 39 04.49	-02 38 35.4	16.894 $\pm$ 0.11	14.766 $\pm$ 0.036	14.187 $\pm$ 0.033	13.803 $\pm$ 0.042	★
Mayrit 994201	05 38 20.90	-02 51 28.0	17.116 $\pm$ 0.12	14.777 $\pm$ 0.030	14.213 $\pm$ 0.033	13.874 $\pm$ 0.047	
Mayrit 258337	05 38 38.12	-02 32 02.6	16.263 $\pm$ 0.07	14.800 $\pm$ 0.034	13.771 $\pm$ 0.030	13.197 $\pm$ 0.038	★
Mayrit 277181	05 38 44.48	-02 40 37.6	17.295 $\pm$ 0.13	14.802 $\pm$ 0.032	14.213 $\pm$ 0.035	13.935 $\pm$ 0.053	★
Mayrit 1493341	05 38 12.80	-02 12 26.7	16.967 $\pm$ 1.00	14.818 $\pm$ 0.036	14.164 $\pm$ 0.037	13.648 $\pm$ 0.045	★
Mayrit 803197	05 38 28.97	-02 48 47.3	16.952 $\pm$ 0.11	14.823 $\pm$ 0.036	14.277 $\pm$ 0.035	13.877 $\pm$ 0.055	★
Mayrit 488237	05 38 17.42	-02 40 24.3	17.248 $\pm$ 0.13	14.833 $\pm$ 0.031	14.314 $\pm$ 0.037	14.093 $\pm$ 0.054	★
Mayrit 685341	05 38 29.62	-02 25 14.2	17.046 $\pm$ 0.11	14.844 $\pm$ 0.033	14.293 $\pm$ 0.032	13.963 $\pm$ 0.059	★
Mayrit 495216	05 38 25.44	-02 42 41.3	17.296 $\pm$ 0.13	14.877 $\pm$ 0.034	14.157 $\pm$ 0.035	13.572 $\pm$ 0.034	★
Mayrit 232341	05 38 39.76	-02 32 20.3	17.556 $\pm$ 0.15	14.890 $\pm$ 0.035	14.284 $\pm$ 0.032	13.942 $\pm$ 0.057	★
Mayrit 395225	05 38 26.23	-02 40 41.4	17.283 $\pm$ 0.13	14.909 $\pm$ 0.036	14.281 $\pm$ 0.040	13.918 $\pm$ 0.058	★
Mayrit 999306	05 37 51.11	-02 26 07.5	17.135 $\pm$ 1.00	14.921 $\pm$ 0.040	14.374 $\pm$ 0.044	13.954 $\pm$ 0.061	
Mayrit 537040	05 39 07.58	-02 29 05.6	17.184 $\pm$ 0.24	14.957 $\pm$ 0.039	14.338 $\pm$ 0.043	13.900 $\pm$ 0.051	
Mayrit 799173	05 38 51.00	-02 49 14.0	16.902 $\pm$ 0.11	15.040 $\pm$ 0.039	14.421 $\pm$ 0.033	14.159 $\pm$ 0.070	★
Mayrit 1580310	05 37 24.47	-02 18 56.5	17.360 $\pm$ 1.00	15.072 $\pm$ 0.054	14.466 $\pm$ 0.055	14.151 $\pm$ 0.068	
Mayrit 1717222	05 37 27.62	-02 57 10.0	17.232 $\pm$ 1.00	15.112 $\pm$ 0.052	14.480 $\pm$ 0.065	14.310 $\pm$ 0.088	★
Mayrit 790270	05 37 52.07	-02 36 04.7	17.487 $\pm$ 1.00	15.142 $\pm$ 0.039	14.554 $\pm$ 0.044	14.195 $\pm$ 0.061	★
Mayrit 1701117	05 40 25.80	-02 48 55.4	16.538 $\pm$ 0.07	15.146 $\pm$ 0.039	14.101 $\pm$ 0.030	13.074 $\pm$ 0.036	
Mayrit 1599271	05 36 58.08	-02 35 19.4	17.364 $\pm$ 1.00	15.146 $\pm$ 0.041	14.511 $\pm$ 0.044	14.170 $\pm$ 0.053	
Mayrit 710210	05 38 20.88	-02 46 13.3	17.410 $\pm$ 0.14	15.186 $\pm$ 0.038	14.572 $\pm$ 0.048	14.162 $\pm$ 0.079	
Mayrit 757283	05 37 55.60	-02 33 05.3	17.573 $\pm$ 1.00	15.219 $\pm$ 0.048	14.592 $\pm$ 0.045	14.185 $\pm$ 0.056	★

**Table A.6.** The Mayrit catalogue: J2000 coordinates and  $IJHK_s$ -band magnitudes of  $\sigma$  Orionis members and candidate members (cont.).

Name	$\alpha$ (J2000)	$\delta$ (J2000)	$I \pm \delta I$ (mag)	$J \pm \delta J$ (mag)	$H \pm \delta H$ (mag)	$K_s \pm \delta K_s$ (mag)	Young
Mayrit 438105	05 39 13.08	-02 37 50.9	$17.793 \pm 0.25$	$15.240 \pm 0.040$	$14.747 \pm 0.045$	$14.311 \pm 0.073$	★
Mayrit 633105	05 39 25.60	-02 38 43.6	$17.228 \pm 0.24$	$15.248 \pm 0.039$	$14.277 \pm 0.032$	$13.650 \pm 0.041$	★
Mayrit 487350	05 38 38.89	-02 28 01.6	$17.067 \pm 0.12$	$15.272 \pm 0.041$	$14.731 \pm 0.045$	$14.431 \pm 0.072$	★
Mayrit 588270	05 38 05.52	-02 35 57.1	$17.996 \pm 1.00$	$15.281 \pm 0.038$	$14.767 \pm 0.057$	$14.243 \pm 0.065$	★
Mayrit 1196092	05 40 04.54	-02 36 42.1	$17.998 \pm 0.16$	$15.305 \pm 0.046$	$14.806 \pm 0.054$	$14.267 \pm 0.072$	★
Mayrit 872139	05 39 23.19	-02 46 55.8	$17.509 \pm 0.24$	$15.334 \pm 0.042$	$14.781 \pm 0.040$	$14.340 \pm 0.067$	★
Mayrit 1120128	05 39 43.59	-02 47 31.8	$17.912 \pm 0.16$	$15.335 \pm 0.048$	$14.780 \pm 0.055$	$14.373 \pm 0.077$	★
Mayrit 379292	05 38 21.38	-02 33 36.3	$17.612 \pm 0.16$	$15.355 \pm 0.038$	$14.790 \pm 0.048$	$14.494 \pm 0.086$	★
Mayrit 1738301	05 37 05.17	-02 21 09.4	$18.469 \pm 1.00$	$15.424 \pm 0.068$	$14.779 \pm 0.074$	$14.313 \pm 0.085$	
Mayrit 407333	05 38 32.44	-02 29 57.3	$17.578 \pm 0.16$	$15.439 \pm 0.055$	$14.840 \pm 0.056$	$14.440 \pm 0.085$	★
Mayrit 1436317	05 37 39.66	-02 18 26.8	$17.966 \pm 1.00$	$15.440 \pm 0.052$	$14.836 \pm 0.049$	$14.401 \pm 0.072$	★
Mayrit 396273	05 38 18.35	-02 35 38.6	$17.821 \pm 0.18$	$15.446 \pm 0.043$	$14.828 \pm 0.046$	$14.487 \pm 0.080$	★
Mayrit 1095334	05 38 12.39	-02 19 38.8	$17.998 \pm 1.00$	$15.485 \pm 0.062$	$14.939 \pm 0.057$	$14.518 \pm 0.087$	★
Mayrit 1082188	05 38 34.46	-02 53 51.5	$17.172 \pm 0.12$	$15.535 \pm 0.055$	$14.043 \pm 0.032$	$12.651 \pm 0.021$	
Mayrit 1720188	05 38 27.97	-03 04 21.5	$18.208 \pm 0.23$	$15.597 \pm 0.054$	$15.070 \pm 0.056$	$14.657 \pm 0.095$	
Mayrit 926354	05 38 37.88	-02 20 39.7	$17.996 \pm 0.20$	$15.603 \pm 0.056$	$14.918 \pm 0.043$	$14.640 \pm 0.092$	★
Mayrit 965028	05 39 15.26	-02 21 50.7	$18.123 \pm 0.25$	$15.605 \pm 0.049$	$14.933 \pm 0.049$	$14.564 \pm 0.078$	★
Mayrit 358154	05 38 55.42	-02 41 20.8	$18.063 \pm 0.25$	$15.622 \pm 0.096$	$14.842 \pm 0.050$	$13.968 \pm 0.061$	★
Mayrit 1504095	05 40 24.79	-02 38 10.9	$18.287 \pm 0.20$	$15.810 \pm 0.059$	$15.296 \pm 0.076$	$14.702 \pm 0.098$	★
Mayrit 926051	05 39 32.70	-02 26 15.4	$17.622 \pm 0.25$	$16.141 \pm 0.098$	$15.099 \pm 0.071$	$14.345 \pm 0.092$	
Mayrit 111208	05 38 41.24	-02 37 37.7	$17.693 \pm 0.17$	$16.375 \pm 0.094$	$15.253 \pm 0.080$	$14.040 \pm 0.058$	★

**Table A.7.** Alphanumeric abbreviations for references used in Tables A.1 to A.5.

Abbreviation	Reference
FA04	Frost & Adams (1904)
CP18	Cannon & Pickering (1918–1924)
MKK43	Morgan, Keenan & Kellman (1943)
Ne43	Neubauer (1943)
HM53	Haro & Moreno (1953)
GW58	Greenstein & Wallerstein (1958)
GBT61	Giclas, Burnham & Thomas (1961)
Le68	Lesh (1968)
Sa71	Sanduleak (1971)
SC71	Schild & Chaffee (1971)
HR72	Herbig & Rao (1972)
Ni76	Nissen (1976)
WH78	Warren & Hesser (1978)
Gu81	Guetter (1981)
JB81	Joncas & Borra (1981)
No84	North (1984)
St86	Stephenson (1986)
Sa87	Salukvadze (1987)
DK88	Downes & Keyes (1988)
Re88	Renson (1988)
HHG89	Hunger, Heber & Groote (1989)
Wi89	Wiramihardja et al. (1989)
G-L90	García-Lario et al. (1990)
TO91	Tovmasyan & Oganessian (1991)
Wi91	Wiramihardja et al. (1991)
Gr92	Grillo et al. (1992)
GC93	Gray & Corbally (1993)
Ha94	Harris et al. (1994)
Lee94	Lee et al. (1994)
CSL95	Cunha, Smith & Lambert (1995)
Ne95	Nesterov et al. (1995)
Al96	Alcalá et al. (1996)
Mo96	Moran et al. (1996)
Wo96	Wolk (1996)
HMS97	Hirth, Mundt & Solf (1997)
CR98	Catalano & Renson (1998)
Re98	Reipurth et al. (1998)
Bé99	Béjar et al. (1999)
Na99	Nakano et al. (1999)
Wh00	White et al. (2000)
YKK00	Yamauchi et al. (2000)
B-JM01	Bailer-Jones & Mundt (2001)
L-M01	López-Martín et al. (2001)
Ue01	Ueda et al. (2001)
ZO02a	Zapatero Osorio et al. (2002a)
ByN03	Barrado y Navascués et al. (2003)
Mu03	Muzerolle et al. (2003)
2MX03	2MASS Team (2003)
An04	Andrews et al. (2004)
Bé04	Béjar et al. (2004b)
Ca04	Caballero et al. (2004)
OvL04	Oliveira & van Loon (2004)
SE04	Scholz & Eislöffel (2004)

**Table A.7.** Alphanumeric abbreviations for references used in Tables A.1 to A.5 (cont.).

Abbreviation	Reference
SWW04	Sherry, Walter & Wolk (2004)
WB04	Weaver & Babcock (2004)
Bu05	Burningham et al. (2005)
Ca05	Caballero (2005)
Ke05	Kenyon et al. (2005)
Ca06	Caballero (2006)
Ca06a	Caballero et al. (2006a)
Ca06b	Caballero et al. (2006b)
Fr06	Franciosini et al. (2006)
Ca07a	Caballero (2007a)
Ca07b	Caballero (2007b)
Ca07	Caballero et al. (2007)
He07	Hernández et al. (2007)
CL-S	Caballero & López-Santiago, in prep.



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